



**Office of Evaluation and Oversight, OVE
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***Evaluation of the Bank's
Policy and Operational
Practice Related to Natural
and Unexpected Disasters***



Office of Evaluation and Oversight

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Acronyms

CAF	Corporación Andina de Fomento
CAPRADE	The Andean Committee for Disaster Prevention and Care
CARIBANK	Caribbean Development Bank
CDERA	Caribbean Disaster Emergency Response Agency
CDMHA	Center for Disaster Management and Humanitarian Assistance
CEPREDENAC	Centro de Coordinación para la Prevención de los Desastres Naturales en América Central
CERESIS	Centro Regional de Sismología para America del Sur
CHAMP	Caribbean Hazard Mitigation Capacity Building Program
CP	Country Paper
DPSF	Disaster Prevention Sector Facility
ECLAC/ CEPAL	Economic Commission for Latin America and the Caribbean
EDC	Efficiency Delivery Curve
EM-DAT	Emergency Events Database
ERF	Emergency Reconstruction Facility
FIDES	Inter-American Federation of Insurance Companies
FONDEN	Mexico's Fund for Natural Disasters - Fondo de Desastres Naturales
FSO	Fund for Special Operations
IRF	Immediate Response Facility
ISDR	United Nations International Strategy for Disaster Reduction
LAC	Latin America & the Caribbean
La Red	Red de estudios sociales en Prevención de desastres en América Latina
NatCAT	Munich Re's natural events database
NEMO	National Emergency Management Organization
NHVI	Natural Hazard Vulnerability Indicator
PPMRs	Project Performance Monitoring Reports
PPP	Plan Puebla-Panama
PREANDINO	Programa Regional Andino para la Prevención y Mitigación de Riesgos
SICA	Sistema de Integración Centroamericana
SNPMAD	Sistema Nacional para la Prevención, Mitigación y Atención de Desastres
TCs	Technical Cooperations

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Evaluation of the Bank's Policy and Operational Practice Related to Natural and Unexpected Disasters

Executive Summary

This report summarizes OVE's evaluation of the Bank's Operational Policy on Natural and Unexpected Disasters, OP-704. The report covers OP-704 (approved in 1998), the IDB Action Plan on Natural Disasters (written in 2000), and operational and non-financial activities related to disaster prevention, mitigation and response undertaken by the Bank between 1995 and 2002. The report responds to a request by the Board of Executive Directors for an evaluation of OP-704 following OVE's 2002 evaluation of the Emergency Reconstruction Facility (ERF), now called the Immediate Response Facility for Emergencies Caused by Natural and Unexpected Disasters (IRF).

The report demonstrates that natural disasters pose great challenges to most of the countries in Latin America and the Caribbean (LAC) and consequently to the Bank itself. During the past thirty years, disasters have affected four million people annually in LAC, causing some 5,000 deaths and US\$3.2 billion in physical losses per year—half or more the level of annual loan commitments by the IDB in recent years, suggesting that the Bank is challenged to keep up with the annual disaster losses experienced by its borrowers.

While most of LAC is highly susceptible to damage from different types of natural disasters, the risks are distributed unevenly, making some countries more vulnerable than others. Natural disasters are particularly damaging in some Caribbean countries (with Jamaica and the Dominican Republic strongly affected), Central America (with Nicaragua, Belize, Honduras and El Salvador particularly vulnerable), and the Andean Region (with Bolivia, closely followed by other countries, the most vulnerable). However, other parts of South America display high levels of exposure too.

The report concludes that there is a need in this situation to manage the risks from natural disasters with a view to reducing losses. At the same time, the report shows that risk management is a challenging proposition, conceptually and practically, with powerful incentives favoring reactive over proactive policies.

The report argues that there is rising awareness and some progress in natural disaster risk management in LAC. Some rather vulnerable countries have put in place initial systems and institutional arrangements for prevention, mitigation, and preparedness. Others that need such arrangements as a matter of priority do not have them or are letting past achievements slip. In the Caribbean, Central America and the Andean Group rather advanced work aimed at risk reduction is being done in supra-national/sub-regional organizations. But the actual state of public policy at the national level in most cases lags behind the elements of good practice advocated by these organizations.

Risk transfer mechanisms, particularly those involving insurance markets and securitization through capital markets (for example, catastrophe bonds), are undeveloped in LAC, and, realistically speaking, will need time before they can play a significant role as part of the range of policy instruments that are available to manage disaster risk. The institutional and regulatory requirements for a functioning insurance and reinsurance market are demanding and far from being satisfied at the present time. As a result, governments find themselves in the position of having to accept more risk than they can and should, given their limited financial strength. Research sponsored by the Bank indicates that many governments rely on technical assistance and debt from international donors for investment in risk reduction and post-disaster recovery and reconstruction.

The challenges to the Bank in the face of intermittent natural disasters, historically, have not so much been in the nature of credit risk (i.e., the possibility that a borrower affected by a natural or unexpected disaster fails to repay principal and interest to the ordinary capital account on time) as they were developmental and in the nature of mission risk. Natural disasters compromise past investments by the Bank and its borrowers. The need to rehabilitate and reconstruct carries opportunity costs in terms of the pursuit of developmental goals necessarily postponed. The Bank does not evaluate these costs and the best courses of action available to deal with them. In fact, and this is a key conclusion of this report, the Bank fails to address the developmental and mission risk implications of intermittent disasters for its programming and financing strategies in highly vulnerable countries. With two recent, partial exceptions, country programming in those countries is silent about the dimension of natural disasters, the need for risk management, and what this might mean for the Bank in terms of its engagement of the borrower, its operational role, and the knowledge contributions that it is called upon to make.

The Bank is quite active operationally and in the form of some non-financial services related to natural disasters. But it addresses the sector as it might others such as competitiveness, information technology, or health: by carrying out activities in the interest of a “balanced” portfolio without offering a convincing strategy and priorities in the context of country programming. In the judgment of this evaluation, natural disasters are in rather numerous countries a sufficiently important development problem to warrant analysis, programming, and consistent attention over time, including above all strategies at the country level to counteract the institutional and incentive distortions that thwart disaster risk management and limit investment in prevention, mitigation, and preparedness.

The question of what financial incentives the Bank might offer to induce such investment is not straightforward under the assumption that differential pricing of some sort (lower loan charges on funds targeting risk reduction) is not politically an option in the “cooperative” that is the IDB. The use of grant-funded technical cooperation as an instrument of choice for working on risk reduction demonstrates that the demand for greater security is price-responsive. But the evaluation also identifies a non-financial obstacle to action in risk reduction, i.e., uncertainty regarding where one stands with respect to what the report defines as the optimum level of security—leading to uncertainty with respect to what to do. Here, the Bank can do much, and in the judgment of this evaluation much more than it has been doing, to build a learning community involving the borrowers, invest in knowledge such as vulnerability assessments and path analysis, and link these functions to programming at the country level, budget allocation decisions, lending strategies, and assistance in the form of technical cooperation that would support these strategies.

For this to become possible, several factors need to change in the judgment of this evaluation. First, OP-704 needs to be revised such as to reflect the approach to disaster risk management that is posited in the Action Plan and described in this report. The internalization of this approach is a prerequisite for being able to more adequately assist borrowing countries in dealing with the challenges associated with natural and unexpected disasters. Second, the scope of the Policy (i.e., the types of disasters that it covers) and some of the stipulations governing the IRF need to be clarified. Third, the Bank needs to rethink the way it is organized to deliver with respect to natural and unexpected disasters: improvements are needed with respect to “mainstreaming” and the integration of efforts by the Operational Departments and the Sustainable Development Department. For example, the traction of the “focal points on natural disasters” in both different Operational Departments and in borrowing countries is uneven, and there is no evidence of feedback between the actions on natural disasters under the Bank’s Regional Policy Dialogue (evaluated favorably by the participants from borrowing countries) and country programming or individual operations supported by the Bank. Fourth, clear commitments and resource frameworks with respect to specified security levels to be achieved over time should be built into country programming in the case of highly vulnerable countries. This will require considerable reflection and *innovation* with respect to the kinds of incentives that can be offered to support countries’ shift toward more proactive

policies. In this context, fifth, more needs to be done to prepare the ground for increased private participation in different forms of risk transfer in the borrowing countries—risk transfer through insurance markets and other mechanisms being key in alleviating the disaster-related financial burden that has traditionally been carried by governments.

The evaluation finds that, although often on an *ad hoc* basis, the Bank is rather active in the field of natural disasters, including to a degree the area of prevention and disaster mitigation. Nevertheless, in following (rather than leading) the borrowing countries and in responding to their short-term needs as it must, the Bank also supports what some have called a “post-disaster payment strategy.” Inevitably, this approach leads to what is known as mission risk because the diversion of resources to emergency response and reconstruction involves opportunity costs, as mentioned, as other projects, including investments in risk reduction and the fostering of enabling conditions for risk transfer, are crowded out.

The evaluation finds with respect to the operational portfolio that the evaluability of said portfolio is low. The projects do not have results frameworks, making it difficult to evaluate them and draw lessons. This, in turn, interferes with the learning function that is essential in building the knowledge, the ownership, and therefore the incentives needed for an effective role by the Bank. The project performance monitoring reports are striking in not providing information about achievements with respect to the natural disaster dimension of multi-purpose projects.

Finally, the evaluation concludes that loan reformulation in the presence of natural disasters is carried out following processes that are not well documented and that contrary to what the evaluation considers good practice the benefits of reformulation and the associated costs, including the opportunity costs, are not assessed.

The report offers the following recommendations in an attempt to help guide the revision of OP-704 and raise the Bank’s effectiveness in dealing with natural disasters:

1. OP-704: Revise and update OP-704. In this context: place disaster risk management at the center of the revised OP-704; limit the scope of OP-704 to natural disasters and technological accidents; provide for Bank action to strengthen the incentives and capacities for risk management in highly vulnerable countries and to prepare the ground for efficient forms of risk transfer and financing; make the revised OP-704 or a derived instrument such as a revised version of the Action Plan goal- and results-oriented (include baselines and targets); provide for linkages between the revised Bank-wide Policy and individual country strategies.
2. IRF: Establish an independent guidance document on the IRF. Limit the IRF to rapid-onset emergencies not covered by other Bank instruments. Establish a process such as a Working Group to clarify the range of rapid-onset emergencies for which the IRF should be eligible.
3. Approach: Modify the Bank’s disaster risk management stream of business from one that is predominantly reactive to one that accommodates an appropriate level of risk reduction. Where appropriate, create financial incentives, for example, through innovative combinations of lending and grant-based funding. Consolidate activities related to natural disasters commensurately with the threat to development embodied in disaster risk.
4. Organization: Develop an organizational alternative capable of assuring integration, synergy, and the functioning of a transsectoral learning community involving all stakeholders. Strengthen the Disaster Management Focal Points as the spearheading community for the institutional shift toward a more proactive stance, focused on country programming and strategies.

5. Operations: Introduce disaster risk management into country programming for highly vulnerable countries. Develop training and guidelines for project teams to incorporate the concept of integrated risk management in loan preparation and execution work. Develop guidelines for a transparent process of loan reformulation, including methods to make explicit the mission risk or opportunity costs associated with reformulation. Design interventions for evaluability.
6. Reporting: Report to the Bank's Executive Board on progress in institutionalizing and mainstreaming risk management related to natural and unexpected disasters.

I. INTRODUCTION

- 1.1 This report summarizes OVE's evaluation of the Bank's Operational Policy on Natural and Unexpected Disasters, OP-704.¹ The report covers OP-704 (approved in 1998), the IDB Action Plan on natural disasters,² and operational and non-financial activities related to disaster prevention, mitigation and response undertaken by the Bank between 1995 and 2002. The report responds to a request by the Board of Executive Directors for an evaluation of OP-704 following OVE's 2002 evaluation of the Emergency Reconstruction Facility.³
- 1.2 For purposes of the report, natural disasters are defined to include hazards such as earthquakes, floods, windstorms (hurricanes and tropical storms), landslides, tidal waves, volcanic eruptions, droughts, forest fires, and erosion, or a combination thereof. Unexpected disasters are mainly due to technological or industrial accidents, dangerous procedures, infrastructure failures or specific human activities that include or lead to industrial or radioactive pollution, toxic wastes, explosions, oil and chemical spills, or terrorist attacks.
- 1.3 The combination of hazard exposure and human activities, settlements and assets can lead to injury or loss of life, property damage, environmental degradation, and social and economic disruption when disaster strikes. The Latin America and Caribbean region (LAC) has a high damage propensity from natural disasters: since 1975, disasters have caused about 5,000 deaths and US\$3.2 billion in physical damage per year, annually affecting some 4 million people.⁴ Natural disasters have had and will continue to have a significant bearing on the development prospects of the Region.
- 1.4 The Bank's services are frequently called upon in the context of natural and unexpected disasters. This report seeks to assess the *relevance*, *efficiency* and (to the extent possible) *effectiveness* of the Bank's operational and non-financial role. It also assesses the *relevance* of OP-704 and the Action Plan as frameworks and operational guidelines for investment in disaster prevention, preparedness, emergency recovery, and rehabilitation and reconstruction.
- 1.5 The report pays special attention to risk reduction strategies and risk financing solutions—both conceptually and as applied in the Region; the incentives that affect countries' willingness to take effective risk reduction measures; the political, institutional, and legal arrangements affecting disaster risk management; the insurance market for disaster-related losses, including the circumstances and failures that limit its

¹ Document GP-92-15 of December 1, 1998.

² IDB, *Facing the Challenge of Natural Disasters in Latin America and the Caribbean: An IDB Action Plan*, IDB-SDS Special Report, 2000.

³ Document RE-264. Following a recommendation by OVE that the instrument's name be changed, the Emergency Reconstruction Facility (ERF) is now called the Immediate Response Facility for Emergencies Caused by Natural and Unexpected Disasters (IRF).

⁴ EM-DAT data; see Chapter II.

development; and the Bank's approach to dealing with the mission risk that can present itself in the context of natural and unexpected disasters.⁵

- 1.6 The report proceeds in three parts. Chapter II examines the public policy challenges posed by intermittent natural disasters. The purpose is to develop a benchmark against which to evaluate the relevance of both OP-704 and Bank action. Chapter III presents the actual evaluation of OP-704, the Action Plan, and the Bank's operational and non-financial response. A brief methodological section at the outset is designed to guide the reader through the considerations and arguments that are advanced. Chapter IV, finally, offers conclusions and recommendations. The purpose of the recommendations is to help guide the revision of OP-704 that Management is scheduled to undertake at the request of the Board.⁶

⁵ A team of experts supported OVE in the analysis of these issues. The team conducted field visits to seven countries that were largely chosen on the basis of their vulnerability to disaster-related risk (Bolivia, El Salvador, Jamaica, Mexico, Nicaragua, Peru). Some 140 respondents were interviewed in the visited countries as well as the Bank (list of names and institutional affiliation available on request). The Bank's field office in Santo Domingo provided a detailed and highly informative report on disaster risk management in the Dominican Republic.

⁶ See GN-2038-13 of 11 June 2003.

II. STRATEGIC FRAMEWORK ON NATURAL DISASTERS AND DISASTER RISK MANAGEMENT IN LATIN AMERICA AND THE CARIBBEAN

A. High levels of damage from natural disasters

- 2.1 LAC countries display a total loss/GDP ratio and a fatality rate from natural disasters that is an order of magnitude higher than that observed for Europe or the US (Table 2.1). Disaster-induced losses per capita are also higher in LAC than in other major developing regions, as one might expect given Latin America's relatively higher average income. Despite data limitations (Box 2.1), the evidence set out in this chapter demonstrates that natural disasters have had and will continue to have a significant impact on both development and growth in the Region. A recent IDB report estimated economic losses relative to GDP to have amounted to 43% for the Caribbean, 32% for Central America, and 4% for South America in 1970-1999.⁷ These loss rates are expected to rise with urban population growth and growth in value-at-risk unless checked by progress in the adoption of hedging techniques and the management of disaster risk.

Box 2.1. The data on natural disasters

Loss and damage assessments are usually undertaken to support decisions about disaster risk reduction. Unfortunately, the available databases display gaps in coverage and inconsistencies in definitions and underlying methods. The short temporal window covered by the available databases on disaster losses (i.e. a few decades) censors low-frequency events such as high-magnitude earthquakes, catastrophic floods, or major volcanic eruptions. In other words, the data available are short-term data, a fact that limits predictive power and the reliability needed for standard probability-based models, e.g. in earthquake engineering or regional flood hydrology.

The resulting state of uncertainty renders decision-making on future investments in disaster preparedness, response, and long-term risk management difficult. The current data situation supports only broad order-of-magnitude extrapolation of potential trends. While necessarily relying on the data currently available, the estimation of future disaster losses must incorporate assumptions regarding hazards posed by extreme events, combined with a valuation of the potentially affected assets.

Although several institutions maintain databases on natural disasters, a comprehensive, standardized archive does not exist. This weakens the scope and reliability of both risk assessments and cost-benefit analysis of risk reduction measures. Fortunately, for events after 1975, data quality has improved considerably (Guha-Sapir and Below 2002). The more recent data show increases in the number of disasters, which however may be a consequence of more thorough reporting rather than an indication of growing disaster frequency.

As part of the present study, figures on natural disasters from three different sources were compiled: EM-DAT, La Red, and CEPREDENAC. These sources were checked relative to each other and relative to other data sets (CEPAL 2000; SwissRe: Sigma 2002a and Sigma 2003; Munich Re: Topics 2002). Generally, information on a given disaster coincided across the different databases. Comparison with records of EM-DAT, NatCAT (MunichRe), and Sigma (SwissRe) natural hazard databases yielded similar findings, particularly for events after 1990. However, depending on the database consulted, one saw a tendency toward underreporting of small- to medium-scale events in individual countries (ISDR/IATF WG3 2002). The presence of underreporting in a number of cases is confirmed by a comparative analysis of disaster losses based on the EM-DAT database and a merged EM-DAT, La Red, and CEPREDENAC database (done for the present report). Because of uneven representation of different countries in the merged database, the empirical analysis presented in this chapter is based on EM-DAT only, unless indicated otherwise. EM-DAT is the only available database covering all countries in LAC. Its downside is that it underreports small events.

Notes: (i) EM-DAT is a worldwide database maintained by the Université Catholique de Louvain, Belgium. (ii) La Red covers all data on natural and non-natural disasters for 18 LAC countries. (iii) CEPREDENAC provides data on Central America.

⁷ Charvériat (2000).

TABLE 2.1
Worldwide overview of natural disaster-induced
direct losses (1975-2002)

REGION	Total Loss (share of 2001 GDP)	Total Loss per capita 2001 (US\$)	Fatalities per year	Fatalities per capita per year
Latin America & Caribbean	5.32%	200	4,915	0.0094
North America	2.61%	887	337	0.0011
Asia	7.25%	150	35,315	0.0097
Africa	5.44%	35	23,275	0.0286
Australia & Oceania	8.83%	1,200	145	0.0046
Europe	3.17%	369	2,665	0.0033

Source: EM-DAT 2003

- 2.2 In absolute amounts, the average annual loss inflicted by natural disasters in LAC is estimated at US\$3.2 billion between 1975-2002 (Table 2.2)—half or more the level of annual loan commitments by the IDB in recent years. The years of most severe losses during this period, according to EM-DAT data, included 1983 (accumulation of events, including floods in Argentina, Bolivia, Brazil and Peru and earthquakes in Chile and Colombia), 1985 (earthquake in Mexico City), and 1998 (floods and landslides following Hurricanes George and Mitch, which accounted for close to 40% of total 1975-2002 losses in the Caribbean, with Hurricane George inflicting particularly massive damage on Jamaica).⁸ Although total losses from natural disasters between 1975-2002 were highest in South America in absolute values, countries in the Caribbean suffered by far the highest per capita losses.

TABLE 2.2
Total loss history for LAC (1975-2002)

SUB-REGION	Total Loss US\$ (bn)	Total Loss per capita in 2001 US\$	Highest Annual Loss US\$ (bn)	Average Annual Loss US\$ (bn)
Caribbean	7.07	322	2.54 (1998)	0.47
Central America*	15.43	268	3.30 (1998)	0.77
Mexico	15.69	158	6.67 (1985)	0.92
South America	53.84	65	8.56 (1983)	1.92
Total	92.03			3.2

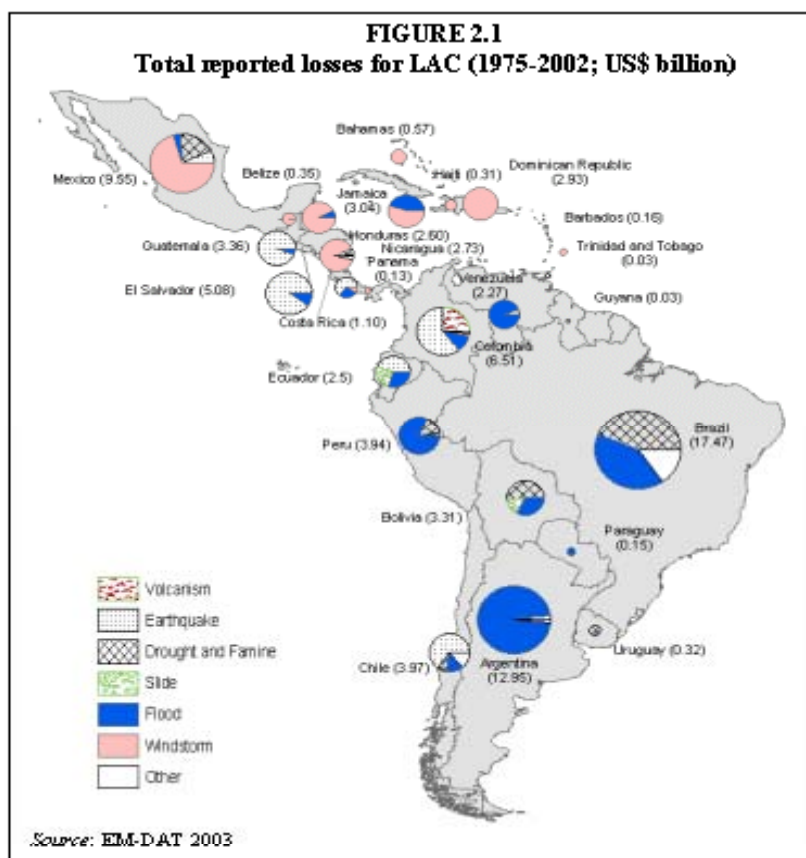
*includes Panama

Source: EM-DAT 2003

- 2.3 Figure 2.1 maps total reported losses experienced in LAC in 1975-2002. It is seen that in terms of natural disaster types the Caribbean was mostly affected by windstorms (including associated floods and landslides), whereas in Central America windstorms, floods, and earthquakes were the dominant events. The trajectories of tropical cyclones are generally limited to low-latitude oceans due to high sea surface temperatures, since latent heat is a prerequisite for the initiation of this type of windstorm. These are the sources of the greatest disaster losses in Central America and the Caribbean. In South America floods and droughts, mainly linked to the El Niño-Southern Oscillation

⁸ A list of the ten worst disaster events in LAC from 1900 to 2002 is given in Annex I.

phenomenon, play a major role in disrupting normal patterns of life. Earthquake epicenters and volcanic hazards, finally, are concentrated along the active tectonic plate boundaries, roughly bordering the Pacific coast from southern Chile to central Mexico, thus endangering a broad coastal strip along the whole of Western South America.



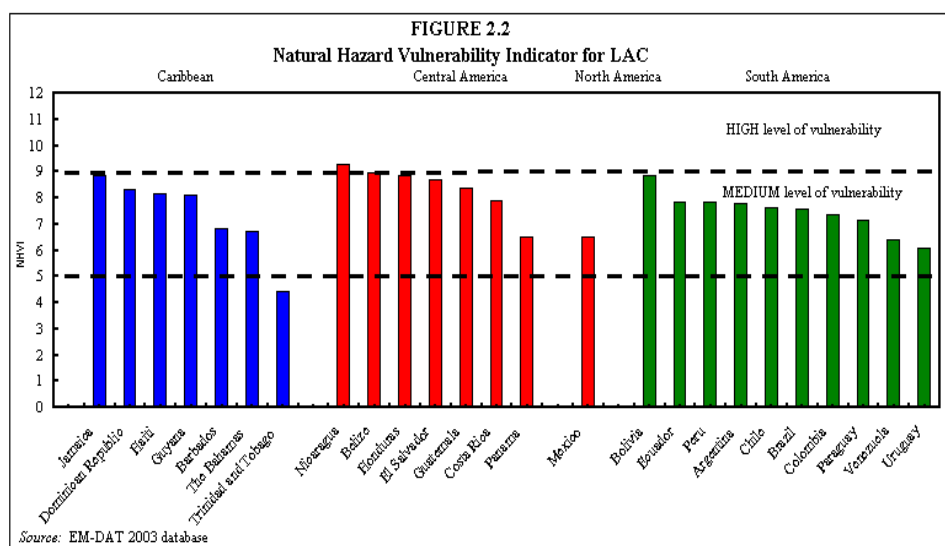
- 2.4 The literature on disaster-induced losses in LAC sub-regions illustrates the truly catastrophic consequences for economic development (CEPAL 1999; Charvériat 2000; Izquierdo 1999). CEPAL (2002) observes a high correlation between the evolution of GDP and the annual number of disasters. For example, according to EM-DAT data, Hurricane Mitch—dubbed the “hurricane of the poor”—caused losses of US\$2 billion to the Honduran agricultural sector, while small farmers in Nicaragua suffered US\$76 million in direct damages and Guatemala lost 5% of its cultivated land.
- 2.5 We conclude that natural disasters threaten both development prospects in LAC and the Bank’s mission which (as set out in the Agreement Establishing the Bank) is to contribute to the acceleration of the process of economic and social development of the regional developing member countries. Natural disasters cause setbacks, at times very severe ones, and thus are at odds with the notion of acceleration of development.

B. A vulnerability index for LAC

- 2.6 A risk index for ranking vulnerability and the likely socioeconomic impact of disasters on a national and transnational scale has been developed by Wagner et al. (2001). Within the

limits of data accuracy, this Natural Hazard Vulnerability Indicator (NHVI) embodies a method for gauging the vulnerability of a country to natural disasters, where vulnerability is the product of the disaster affected population relative to the total population times the disaster-related economic loss relative to GNP in each country.⁹

- 2.7 Following Wagner, NHVI threshold values can be defined to classify countries according to their degree of vulnerability. Thus, countries with a $\text{NHVI} \geq 9$ are considered to be highly vulnerable, whereas $9 \geq \text{NHVI} > 5$ and $\text{NHVI} < 5$ would denote medium and low vulnerability, respectively.
- 2.8 NHVI calculations were performed for this report. The situation in LAC based on the above classification is depicted in Figure 2.2, which places the majority of countries in the upper half of the medium vulnerability category, with differences between countries. Sensitivity analysis based on alternative methods of calculating the NHVI or comparable indices did not significantly alter the country rankings conveyed in Figure 2.2.¹⁰ It is seen from these rankings that natural disasters are particularly damaging in some Caribbean countries (with Jamaica and the Dominican Republic strongly affected), Central America (with Nicaragua, Belize, Honduras and El Salvador particularly vulnerable), the Andean Region (with Bolivia, closely followed by other countries, the most vulnerable), and other parts of South America displaying high exposure.



⁹ Mechler (2003) shows that the quantification of direct and indirect damages can be fraught with error and may therefore distort NHVI values. Nonetheless, the NHVI provides a rapid method for international comparison.

¹⁰ The Bank, in association with the Universidad Nacional de Manizales's Institute for Environmental Studies, is working on the development of an assessment methodology that will measure key elements of countries' vulnerability to disasters and the performance of different risk management tools in reducing that vulnerability. These "indicators for disaster risk management" are intended to be policy-sensitive, transparent and relatively easy to collect and calculate on a regular basis and to be easily understood by policy-makers. Indicators will be grouped to reflect the main elements of a country's risk reduction and management performance. It is expected that through this work a key tool for the Bank to promote comprehensive and integrated risk management in the Region will be developed. See September 2003 progress report on the technical cooperation project ATN/JF-7907-RG.

C. Principles of natural disaster risk management

- 2.9 Risk reduction efforts are measures addressing any or all of the components that make up risk. For example, a country may manage a disaster risk by reducing the exposure of human settlements to hazard, by reducing the value-at-risk to a hazard, or by reducing the vulnerability to the hazards. As the values-at-risk grow, vulnerability has to decrease in order to keep risk constant (Box 2.2).

Box 2.2. Definition of risk

The following definition alludes to the range of issues susceptible to being addressed in disaster risk management. Risk is defined as a combination of:

HAZARD

Defined by the frequency or probability and the intensity of a disaster event occurring within specified time and space (magnitude and location);

VALUE AT RISK

Defined by the total number of people, settlements, and economic values exposed to hazard (exposed assets);

VULNERABILITY

The number of deaths and hurt or homeless people relative to the total population affected and the damage caused by the event relative to total value-at-risk (definition adopted for the calculation of the NHVI).

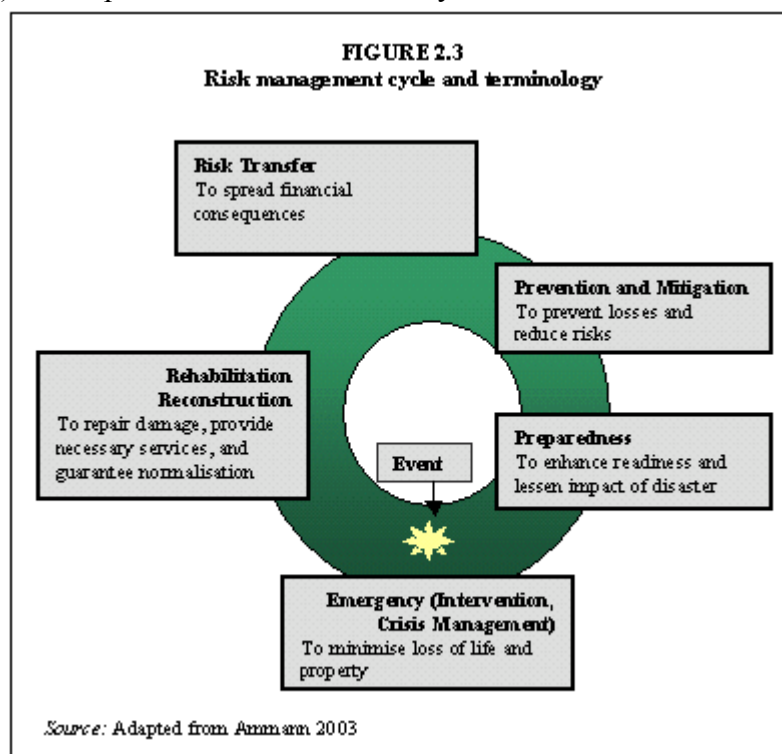
A more general definition holds that vulnerability is the susceptibility of a community to be affected by, or suffer adverse effects, in the context of natural or unexpected disasters. Vulnerability also is about resilience—or the lack of it which limits a community's capacity to recover (Cardona et al. 2003).

- 2.10 In mathematical terms, multiple small losses represent the same risk as a single rare but major event. While the latter is perceived by the public to be far more significant, especially when it involves loss of life, a comprehensive approach to disaster risk management—which arguably, in vulnerable countries, should be part of a wider strategy for development and poverty reduction—should accommodate both large and small events.
- 2.11 The whole risk process may be visualized as a risk management cycle (Figure 2.3). Disaster risk management, as the term is used in this report, covers the spectrum of possible measures across the risk management cycle that can lead to a decrease in risk or an increase in human security. The four possible ways to deal with risks from natural hazards are:¹¹
- *Risk prevention*: Measures that attempt to *predict* new risks and *prevent* their occurrence. Examples: abstaining from particular activities; land-use planning to separate hazardous zones from safe ones, although densely populated areas clearly offer limited scope. Risk prevention refers to prospective risk management, whilst mitigation (below) refers to corrective action.

¹¹ For a glossary of terms and definitions see Cardona et al., 2003. Note that the terms in question are not completely unambiguous and that they are given somewhat different meanings in different circumstances and by different authors. It is important therefore to agree precise definitions when risk management systems are being developed under specific country circumstances.

- *Risk mitigation*: (i) Measures that attempt to *reduce* existing risk and (ii) measures to reduce the consequential damage and loss occasioned by a dangerous event once it occurs. Mitigation assumes that it is not feasible to avoid or control risk completely but that risk can be reduced to levels that are acceptable or feasible.¹²
- *Preparedness*: Measures to arrange for the effective and opportune provision of early warnings, search and rescue, and emergency and rehabilitation management; measures to help limit the time and scope of disaster impact, including second-order effects such as disease and collateral damage.¹³
- *Risk transfer*: This refers to mechanisms for passing on and spreading financial consequences; such mechanisms must be in place before damage occurs; insurance markets are key; risk transfer also occurs through public finance mechanisms funded by domestic and international sources.

Note that the often-used term *risk reduction* (which includes technical, architectural, organizational and financial measures that have to do with risk management and risk transfer) encompasses all of the above ways to deal with risk.



2.12 Ideally, decision makers would base their choice of measures on (i) clearly pre-defined security levels, (ii) risk scenarios or models (analysis of the range of plausible causes and dimensions of risk affecting specific parts of the country and population groups), and (iii)

¹² On risk acceptance note that individual and community-level responsibilities and absorption of damages play a significant role in the treatment of natural disasters. Full security is not feasible economically. Society therefore needs to clarify the level of risk it is prepared to accept.

¹³ Indirect or collateral damage linkages can be very important. As an illustration, officials in El Salvador, Nicaragua and Bolivia mentioned in field interviews for this report that in their experience waste accumulation in gulleys, water pipelines and canals can lead to needlessly high flood damage affecting homes, roads, and other infrastructure.

risk assessments covering hazard assessments, value-at-risk evaluation, exposure and vulnerability analysis, loss frequencies, evaluation of safety gaps, and comparison between desired security levels and existing risk. After analyzing and quantifying the probability of losses under reasonable scenarios, they would proceed to implement adequate measures ex-ante, during events, and ex-post. They would note that effective crisis management presupposes detailed emergency planning and the ability to be operational even as a hazardous situation is developing. Catastrophes keep driving home the lesson that rapid and appropriate exchange of information between different levels of affected people and institutions is critical.

D. Natural disaster risk management in LAC

- 2.13 The field interviews conducted for this report and the available literature¹⁴ suggest that while LAC countries display a range of capabilities and practices related to disaster risk management today, the incentives to apply proactive risk reduction policies are in general rather weak for a number of reasons: information problems that cloud the prospect for consensus on what to do; the politics of emergencies where rapid response activity enjoys public visibility while pre-disaster risk reduction does not; institutional constraints; and the presence of significant amounts of post-disaster relief and reconstruction money from external sources that may act as a disincentive to investment in risk reduction.¹⁵
- 2.14 Two other factors in play are short memories and conflicting priorities. As stated by Gilbert and Kreimer (1999): “[...] in the immediate aftermath of a natural disaster ... mitigation investment is a very high priority in both the eyes of communities at risk and also local and central governments. As time goes by and memories fade, so too does the priority for mitigation diminish.” On the reality of conflicting priorities, the following quote from a field interview conducted in La Paz, Bolivia, for the present report is self-explanatory (May 2003): “We don’t have electricity or running water for many of the people living in our district. We have inadequate roads, and many people live in temporary housing from the last disaster. How can we attempt to make investments in lowering risk when faced with these and other priorities? Where do we start?”
- 2.15 A single source covering all of the Bank’s borrowing countries on the status of the arrangements and achievements with respect to the above four ways to deal with risk does not seem to exist, implying that the information has to be pieced together. This is done below for the Andean Region, Central America and the Caribbean, from which exercise it is concluded, first, that awareness of the merits of disaster risk management is growing in LAC, and second, that many of the more vulnerable countries still fail to live up to the challenges of risk management posed by intermittent disasters.¹⁶
- 2.16 Historically, the revealed preference in the three sub-regions has been for disaster response—symptomatic of a vision of natural disasters as *fuerza mayor*, beyond human control. The linkages between human activity and disaster-induced losses have not

¹⁴ For example, Freeman et al. 2003; Herzer and Clichevsky 1999; CEPAL 2002; Freeman et al. 2001.

¹⁵ A point already made in OVE’s evaluation of the ERF, Document RE-264.

¹⁶ Country notes on this topic written in conjunction with fieldwork carried out for the present study are available on request. Also, see the discussion on risk reduction strategies in Document RE-264.

figured prominently in the public's consciousness. Institutional arrangements and policy instruments such as crisis funds, post-disaster reallocation of public expenditure and flexibilization of procedures have favored a reactive stance. Other factors fostering this attitude reportedly include the instability of the civil service with its high turnover rate of public officials and short-term focus, and external assistance, which in the past flowed (and seemingly to this day flows) more copiously in response to disasters than in support of prevention. Efforts focusing on relief and reconstruction have tended to take precedence over ex-ante protection, and programmed investments for protection have often been postponed because of fiscal constraints.

- 2.17 More recently, preventive measures have begun to be introduced, including the establishment of legal mechanisms to guarantee resources for both prevention and response in Bolivia and Colombia and the earmarking of 5% of the resources of FIDES, a public investment fund, for preventive projects in Venezuela. Colombia, through its *Sistema nacional de prevención y atención de desastres* established in 1989, has been a leader in instituting a policy and legal framework that enables a comprehensive, multi-sectoral approach to disaster risk management. The role of Colombian experts and graduate-level training opportunities in disaster risk management in the country have been important in this shift and its consolidation.¹⁷ While the challenge for Colombia not to fall back into an emergency focus continues to exist—implying the need to upgrade and further consolidate the *Sistema nacional*—the country is a leader in such risk reduction approaches and measures as the introduction of building codes and enforcement, municipal programs, and the integration of science and technology with public policy making.
- 2.18 Governmental awareness in the Andean countries is evolving in the direction of more proactive risk management.¹⁸ International cooperation to foster the regional public good of an enhanced shared understanding of the available policy options stands out among the efforts underway. Thus, following the 1997-98 sequence of El Niño-related events, the regional Andean program for the prevention and mitigation of risks (PREANDINO) was created at the behest of the Presidents of the five countries, followed by the establishment in 2002 of CAPRADE, the Andean committee for the prevention and response to disasters. In addition, institutions to address disasters in both an ex-ante and an ex-post sense are being created at the national and local levels. Also, an innovation that can be observed in some countries is the growing involvement of Planning Ministries or their equivalent in disaster risk management, thus broadening the focus from the response-centered approach traditionally brought to bear by Civil Defense.
- 2.19 The story in Central America and the Caribbean is similar to the Andean experience: as in the latter case, risk reduction efforts and disaster preparedness have begun to gain some ground. However, the most advanced work aimed at risk avoidance and risk reduction is being done at the supra-national/sub-regional level through CEPREDENAC, the Central American coordination center for the prevention of natural disasters, and

¹⁷ See resources under La Red at www.desinventar.org.

¹⁸ See OVE's ERF evaluation for a description of proactive institutional arrangements for disaster management in Peru (Box 3.1 in Document RE-264).

CDERA, the Caribbean disaster emergency response agency.¹⁹ In both sub-regions it can be said (i) that awareness regarding the need for a more comprehensive approach to risk management with a stronger focus on the ex-ante dimension has grown in the aftermath of recent events, and (ii) that the actual state of public policy at the national level is not yet on a par with the good practice pronouncements that tend to be aired at international conferences.

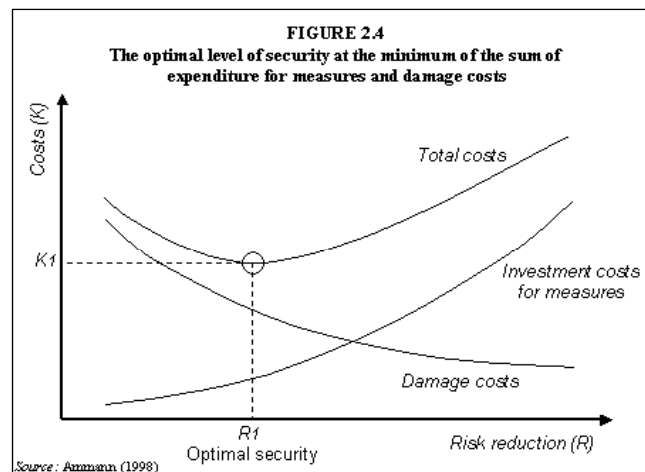
- 2.20 In Central America, CEPREDENAC was formed in 1995 as a regional intergovernmental organization under the Central American Integration System (SICA). It proactively influenced sectoral programs under SICA with a view to promoting the incorporation of disaster mitigation projects. Of note in this context is the 1999 Guatemala Declaration and Strategic Framework for the Reduction of Vulnerability and Disasters in Central America that clearly emphasized risk reduction over response, laying out a multi-sectoral approach with goals for incorporating risk reduction into development planning.²⁰ The key challenge since then has been for national policies to rise to the level achieved supra-nationally, applying the knowledge and good practice implied in the Guatemala Declaration. Important efforts are underway in this respect in every country, but it cannot be said today that Central America has been effectively mobilized for comprehensive national-level approaches to the management of disaster risk.
- 2.21 In LAC as a whole, three realities remain: first, disaster risk-related policy-making goes back and forth in time, implying that advances in the direction of pro-active policies can slip as they reportedly have in the Dominican Republic in recent times; second, as shown in the next section, the incentives in terms of risk financing continue to be stacked in favor of financing disasters rather than prevention; and third (and this may help explain the first point) disaster risk management is influenced by entrenched institutional and political interests that inherently make the move towards more comprehensive and integrated risk management conflictive and slow. National economic authorities have taken time to recognize the role of planning and sectoral-level policy-making and investment in reducing exposure and vulnerability to disasters. Instead, the focus traditionally in most countries has been on civil protection, which has emerged from a military/contingency planning background focused more narrowly on preparedness and above all the management of emergencies.

¹⁹ CDERA has promoted a proactive framework for disaster risk management and sponsored a comprehensive disaster management baseline study (2001) and research on the management of disaster risk for tourism, urban water supply, agriculture and fisheries in the context of climate change, among other efforts.

²⁰ www.cepredenac.org/04_temas/cumbre/declara.htm.

E. Natural disaster risk financing

- 2.22 As suggested earlier, a comprehensive approach to disaster risk management would consider all phases of the risk cycle depicted in Figure 2.3 and must include the possibility of potential losses. Cost-benefit analysis can help identify efficient solutions and thus the extent of losses that society may choose to accept without insurance. Figure 2.4 sketches the pertinent relationships schematically: (i) progressively higher levels of security are associated with increasing investment cost and decreasing damage cost; and (ii) the optimum security level is that which minimizes the sum of damage losses and investment cost. A simplified analysis indicates that countries on the left side of the optimum are spending too much to cover losses, whereas countries on the right spend too much on preventive measures. The problem today is that countries tend not to know where they stand with respect to the optimum. We surmise that this uncertainty is an impediment to action.



- 2.23 There are situations in which preventive measures (or preventive measures beyond a certain level) are not the most cost-effective course of action. Economic losses occur in any case when disaster strikes, mitigated by the amount and effectiveness of the preventive measures taken. Additional solutions that deserve to be examined are in the nature of transfer mechanisms: losses are recouped by transferring risk to an external financial system through the insurance market, commercial debt or reliance on official external financing.
- 2.24 In recent years, disaster risk financing solutions have attracted growing attention in LAC as losses from natural disasters and an awareness of the need for more active risk management have spread (Blaikie et al. 1996; Froot 1999; IDB 2000a; Keipi and Tyson 2002). This section discusses possible avenues for financing disaster losses through private and public mechanisms.

1. Risk insurance

- 2.25 Private risk financing covers own losses and expenditures for mitigation and reconstruction, part of which may be covered by insurance and reinsurance, provided that a market exists or can be created.

2.26 In LAC, the insurance market for disaster-related losses is not well developed—a circumstance that has led the IDB (and others) to invest in efforts to study the problem²¹ and subject it to debate in such fora as the Regional Policy Dialogue. The thinness of the market is illustrated by the data in Figure 2.5: non-life insurance premiums amount to only 1.5% of GDP in LAC, with premium expenditure per capita reaching US\$54 in 2001.²² LAC accounts for 2.8% of the 2001 world market for non-life insurance direct premiums with some notable between-country differences in premiums/GDP as seen in Table 2.3. An aspect to note in the table is the high inflation-adjusted growth in premium between 2000 and 2001 in some countries: El Salvador, which was struck by two earthquakes in early 2001 (23%), Chile (22%), Venezuela (15%) and Colombia (12%). The trend noted for El Salvador is assumed to reflect a post-disaster increase in the cost of or the demand for insurance, or both.

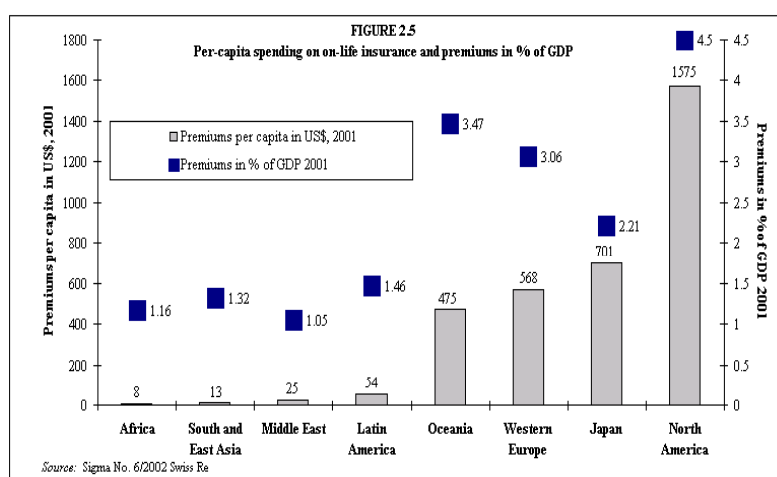


TABLE 2.3
Non-life insurance direct premium volume in LAC (2001)

Country	Premiums (US\$ million)	Change rel. to 2000 (% inflation- adjusted)	Share of world market (%) 2001	Premiums in % of GDP 2001	Premiums per capita (in US\$) 2001
Brazil	8,953	2.7	0.92	1.78	53.2
Mexico	5,893	9.6	0.61	0.95	59.4
Argentina	4,418	7.4	0.46	1.64	118.3
Venezuela	2,639	15.5	0.27	2.12	107.2
Colombia	1,465	11.9	0.15	1.78	34.0
Chile	837	22.9	0.09	1.3	54.3
Dominican Republic	442	14.1	0.05	1.98	48.3
Peru	363	1.8	0.04	0.67	13.9
Uruguay	314	-3.9	0.03	1.54	93.6
Costa Rica	304	-2	0.03	1.82	81.4
Ecuador	287	8.5	0.03	1.6	22.3
Panama	246	-0.6	0.03	2.44	84.4
El Salvador	190	23.1	0.02	1.38	29.6
Jamaica	188		0.02	2.4	70.3
Guatemala	170	5.7	0.02	0.82	14.6
Barbados	141		0.01	5.67	528.6
Trinidad and Tobago	133		0.01	1.5	92.4
Bahamas	132		0.01	4.3	440.0
Honduras	121	2.3	0.01	1.89	18.2
Other LAC countries	391		0.04		
Total	27,627	7.1	2.85	1.46	53.5

Source: Swiss Re, Economic Research & Consulting, Sigma No. 6/2002.

²¹ Andersen 2002; Freeman et al. 2003; World Bank 2003, IDB-OVE 2002.

²² Emerging markets account for over 85% of the world's population and around 23% of global GDP, but they only generated 10% of insurers' global life and non-life insurance premium income in 2001 (Sigma 2002c).

- 2.27 Natural hazards are at this stage at most covered (and rarely so) in conjunction with a fire policy referring to assets such as buildings and contents or offering business interruption protection. Public infrastructure such as roads, railway Tracks, pipes, transmission lines, bridges, tunnels, dikes, harbors or similar structures tend to be uninsured and at this stage may be uninsurable, implying that losses have to be absorbed by governments. Typical for any natural hazard insurance under prevailing conditions in LAC is that the coverage displays gaps and uncertainties. The way to start addressing this is by identifying and quantifying risk—a precondition to working out insurability.
- 2.28 The requirements for a functioning insurance/reinsurance market (at reasonable levels of transaction costs) that according to industry sources and fieldwork done for this report are unfulfilled in most settings in LAC include:
- *Acceptable quality of risks* (for example, certified by building standards): requires a combination of regulation and control.
 - *Assessable/quantifiable exposures*: requires detailed data and/or suitable hazard models, e.g. dam-break induced floods, storm surges, etc.
 - *Acceptable anti-selection risk*: losses should happen randomly. High covariance is a problem. For this reason, for example, flood risks are difficult to insure if assets located in floodplains are affected every few years.
 - *Adequate capitalization of insurance companies* (the reinsurance market expects local markets to retain some portion of the risks).
 - *Availability of sufficient reinsurance capacity to cover major losses*: in principle, according to industry sources, there is ample reinsurance capacity available for any loss scenario in LAC with the possible exception of some Caribbean islands that form part of the Atlantic hurricane scenario. Insurance pools (i.e., associations of insurance or reinsurance companies) covering disaster-induced losses have operated successfully in many countries around the world for years. In developing countries, affordability of premium can be a problem.
 - *Government disposes of sufficient funds to absorb (part) of uninsured/uninsurable losses*: seen as a problem by industry analysts; interesting experiences in Colombia and Mexico (Freeman et al., 2003).
 - *Adequate legal framework and judiciary practice*.
- 2.29 By any measure, this list represents a daunting set of long-term challenges to private insurance market mechanisms for financial risk spreading.

2. Risk-linked securities and parametric insurance

- 2.30 The most common form of financial market transaction for natural perils is a catastrophe bond (cat bond), which works like other rated market bonds, but with the bond issuer's (equivalent of) default probability based on the occurrence of a natural or other type of major disaster.
- 2.31 To attract investors, cat bonds are structured such that only a major event triggers a pay out of the escrowed principal of the bond (i.e., capping of peak losses only). The bond's main benefit thus lies in the extra capacity to absorb worst-case events. Many cat bonds have so-called parametric triggers, leaving the basis risk with the issuer. Investors tend to

require a substantial premium or spread over LIBOR for cat bonds, making them expensive relative to insurance, where the latter is an option. Cat bonds have been used by reinsurers as complementary tools for securitizing peak exposures (e.g. Earthquake California, Tropical Cyclone Atlantic). They do not appear to have been used in LAC so far. The Bank's Private Sector Department has studied the possibility of participating in a cat bond transaction for the Caribbean region, but has concluded negatively for now.²³

- 2.32 Parametric (re)insurance does not indemnify an insured person or entity against actually incurred losses, but grants a pay-out of an agreed amount when a parametric trigger is reached or exceeded (e.g. wind speed, Richter scale magnitude, etc.). Parametric insurance appears to be well suited for uninsurable or "non-assessable" risks (some infrastructure, agricultural crops—see Box 2.3), one advantage being the immediate availability of money after the triggering event. Particularly in the case of smaller events, there remains some basic risk since the actual losses of individual ensured entities are not perfectly correlated with the parametric trigger (one of the reasons why in some deals done so far trigger levels have been set rather high, i.e., at frequencies of less than 1-in-50 years).

Box 2.3. Parametric crop insurance – scope and limitations

The experience with traditional multiple-peril crop insurance is a rather unhappy one: it comes at a high administrative and fiscal (subsidy) cost and offers opportunities for moral hazard. High premiums have tended to exclude small farmers. In recent years, however, new parametric models have been proposed—based on the occurrence of a weather or disaster event rather than on actual losses such as crop failure. Drought, for example, can be defined as a shortage of water. The trigger factor here is a rainfall deficit, which can be measured and independently verified without being subject to manipulation. A necessary pre-requisite is access to representative meteorological data, not a very difficult problem to solve.

Parametric crop insurance policies can be sold in standard units for little administrative cost for events resulting in the same indemnity payment for all buyers. The principle is simple in that no on-site inspections, individual contracts or consulting are needed. A potential disadvantage is the fact that in the event of a drought, all policyholders have to be compensated at the same time. This can pose an intolerable level of risk exposure for the insurance provider on the local level. Mechanisms to spread these financial risks internationally are still to be further developed.

Source: Varangis 2003.

3. Public risk financing

- 2.33 Public risk financing can come from domestic and external sources, the former including governmental budget reallocation, new taxes, and domestic credit, the latter including official grants, loans, loan reformulations, and guarantees from bilateral and multilateral institutions.
- 2.34 Research sponsored under the IDB's Regional Policy Dialogue has much to say about how countries tend to deploy these resources; it generally concludes that failure to

²³ Kusakabe 2003. A good discussion of cat bonds is Deutsche Bank Securities, 2003 (presented at the IDB in November 2003).

understand the risk from natural hazards can lead to highly inefficient choices.²⁴ To begin with, research indicates not surprisingly that domestic sources of finance are highly constrained relative to the cost of significant disasters: governments' budgetary commitments tend to be rigid, implying that the fraction of the current budget that can be reallocated to respond to a disaster is limited to perhaps 5-10%; tax increases are difficult to bring about (although Colombia did it following the *eje cafetalero* earthquake in 1999); and constraints on domestic credit in an environment of fiscal prudence (and IMF debt constraints) are tight.

- 2.35 External sources are similarly constrained in relation to the cost of significant disasters, although (as mentioned in this chapter and documented in OVE's ERF evaluation) they can be counted on and, depending on the success of the resource mobilization strategy employed, may cover a significant share of the cost of responding to a disaster situation. Indeed, many countries rely on funding from international sources to support their post-disaster recovery and reconstruction.
- 2.36 Public decision-making about natural disaster finance relies in theory on identifying the appropriate risk financing strategy by examining possible gaps between a country's expected disaster losses defined as finance needs and its ability to pay for these losses defined by finance sources and risk transfer possibilities. In practice, however, most countries do not appear to consider the concept of a natural hazard resource gap in their disaster finance strategies. Instead they pursue what may be called a post-disaster payment strategy—with some exceptions, such as Mexico whose *Fondo de desastres naturales* (FONDEN) signals an explicit disaster risk finance concept.²⁵
- 2.37 The research sponsored under the Regional Policy Dialogue confirms the relevance of a number of themes that were touched upon at different junctures in this chapter: First, disaster risk management is worth pursuing because if disasters are not anticipated and planned for, the diversion of scarce financial resources to relief and reconstruction causes high opportunity costs as other projects contributing to economic growth and the eradication of poverty cannot continue as planned.²⁶ Second, insurance and risk transfer techniques (such as securitization through the capital market) can play a role in relieving governments from some of the risks that they have traditionally assumed—but the information failures and the constraints inhibiting private participation need to be overcome. And third, international financial institutions should work with their borrowers to achieve a better balance between the financing of relief and reconstruction on the one hand and, on the other, the provision of support for proactive policies centered on prevention, mitigation, preparedness, and risk transfer.

²⁴ See Freeman et al. 2003 on which this section is based. This study investigates national practices related to the management of disaster risk in Latin America. It presents four case studies on financial strategies for natural disaster reconstruction: Bolivia, Colombia, Dominican Republic, and El Salvador.

²⁵ The Mexican government allocates budgetary funds for disaster relief and reconstruction efforts by placing them in FONDEN, thus providing for the repair of uninsured infrastructure, immediate assistance to restore the productivity of the farm population, and relief to low-income victims of disasters (Kreimer et al. 1999).

²⁶ Freeman et al. 2003, p. 35.

III. EVALUATION OF OP-704 AND BANK ACTION RELATED TO NATURAL DISASTERS

A. Methodological considerations and scope

- 3.1 The previous chapter demonstrated three realities: natural disasters inflict frequent and substantial damage in LAC; natural disaster risk should be proactively managed; the incentives and the capacity for such management, however, are generally weak. In addition, the previous chapter explored the options for financing and transferring risk. It found that insurance markets for natural disaster risk are undeveloped in LAC. Countries rely on public risk financing from domestic and external sources.
- 3.2 The Bank's role in this situation is to help strengthen the incentives and capacities for risk management in the framework of the risk management cycle depicted in Figure 2.3 and to help prepare the ground for efficient forms of risk transfer and financing. A question to be investigated in this chapter is to what extent the Bank delivers on this role. The role would seem to come in two parts: a knowledge function designed to help reduce uncertainty with respect to the costs and benefits of courses of action aimed at deepening protection from natural disasters (in essence, this is about how to reach the optimum security level in Figure 2.4); and a financing function designed to make possible the investments thus prioritized.
- 3.3 The chapter focuses first on OP-704 and the Action Plan, i.e., the Bank's institutional directives and statements of intent on natural and unexpected disasters. Do these statements provide for an adequate and effective role by the Bank?
- 3.4 The chapter then examines the Bank's operational action and non-financial services related to natural disasters. Is this action appropriate in the light of the Policy, the Action Plan, and the risk management cycle, and is it effective?
- 3.5 In addressing these latter questions, the chapter goes through the following steps: (i) review of the treatment afforded natural disaster-related issues in the Bank's programming literature (Country Papers and Programming Memoranda); (ii) analysis of the loan portfolio corresponding to natural disasters since 1995 (this focuses on the pertinence of the choices underlying the corresponding collection of loans as well as the loans' evaluability and efficiency of delivery; (iii) review of non-financial products and technical cooperation; and (iv) analysis of loan reformulation practice and how the Bank deals with the mission risk that can arise in the context of natural disasters.

B. OP-704 and the Action Plan

1. Basic considerations

- 3.6 The Operational Policy on Natural and Unexpected Disasters (OP-704) differs from the Bank's earlier natural disaster-related policies in that it introduces the previously absent notion of disaster prevention. It distinguishes between three disaster-related temporal

stages—before, during, and after the disaster—and provides for the possibility of Bank action at each of the stages. The Bank would support disaster prevention, mitigation, and preparedness efforts *before* disaster strikes; it would lend funds to minimize the loss of life and property *during* emergencies; and it would finance recovery efforts, repairs and reconstruction thereafter.

- 3.7 However, OP-704 does not coherently follow through on this seemingly even-handed approach. Its focus is on addressing disaster events rather than risk management in the more comprehensive sense of the term that was introduced in Chapter II. It emphasizes the ERF (now the IRF) as a means to bridge, under clear rules, the during-the-disaster and immediate post-disaster period. OP-704 actually created the ERF. Except for the ERF, however, it does not spell out the instruments that are to be deployed at each of the three stages surrounding natural disasters. It is silent about the issue of risk transfer.
- 3.8 In 2000, to update OP-704, and in preparation for a seminar held on the occasion of that year's Annual Meeting, the Bank prepared an Action Plan on natural disasters articulated around the notion of disaster risk management. The Plan represents a qualitative departure from OP-704 in the sense that it argues for a cross-sectoral vision, associates disasters with development (and the environment), focuses on the reduction of vulnerabilities and risk, and places emphasis on prevention, mitigation, and preparedness.
- 3.9 The Plan makes the case for introducing risk management, prevention, mitigation and preparedness into borrowers' development agendas, proposing: the creation of a sector facility for disaster prevention;²⁷ disaster risk reduction as a regular component of the Bank's programming dialogue with member countries; the establishment of disaster risk focal points in the Bank; regional and sub-regional partnerships, networks and alliances for risk management; and a list of principles of engagement for the Bank and its borrowers, i.e.:
 - *National Systems for Disaster Prevention and Response*
 - *Culture of Prevention*
 - *Lessen the Vulnerability of the Poor*
 - *Involve the Private Sector (risk-spreading financial instruments)*
 - *Generate Risk Information for Decision-Making and*
 - *Leadership and Cooperation (regionally and beyond).*
- 3.10 The Plan is "state-of-the-art" in the sense that it espouses and is compatible with the vision of risk management that has emerged in the literature in recent years and that is increasingly being adopted at the conceptual level in LAC. As such, the Plan goes beyond the Policy in what this evaluation views as the right direction. Still, two observations are in order:
 - First, as one looks through the action items advanced under the Plan, one senses a weakening relative to the Plan's analytical and strategic focus in that the notion of vulnerability as a consequence of development processes is not the object of much proposed action (although such items as land use regulation do appear).

²⁷ The Disaster Prevention Sector Facility was approved in 2001; see Document GN-2085-5.

- Second, the Plan is not a “plan” since it fails to propose (i) quantitative and time-bound targets in terms of the reduction of vulnerability, (ii) resource commitments, and (iii) an indication of how the Bank would organize itself to deliver on the goals proffered under the Plan. Because of the lack of a performance framework and performance indicators the Plan is not “evaluable.”
- 3.11 We thus have a situation in which (i) there is a Policy, crafted as a high-level guidance document in accordance with the Bank’s definition of *Operational Policies*,²⁸ that does not fully convey the right framework, and (ii) there is an Action Plan that does propose the right framework, but is not a plan in a purposeful business sense of the term. As Management proceeds to update and revise OP-704 it will be necessary for it to clarify the desired shape and purpose of the updated guidance to be given to the Bank, preferably in one document rather than two.
- 3.12 In this context, with a view to making the new guidance statement business-like and monitorable, it may be helpful to recall some of the points agreed in the recent Board-approved “Integrated Strategy Implementation Plan”.²⁹ link the strategy/operational policy process more closely to administrative budget allocations; establish a clearer linkage between Bank-wide strategies/policies and individual country strategy documents; disseminate the strategies;³⁰ and commit Management to undertake sector assessments at country level as an integral part of the strategy/policy formulation and implementation process. Sector assessments in the present context would be disaster vulnerability assessments, and studies (including path analysis) to determine the costs and benefits of actions aimed at gradually approaching optimum security as defined above.

2. What scope for the Policy and the Action Plan?

- 3.13 The Policy and the Action Plan cover rapid-onset natural disasters. The Policy, in addition, covers slow-onset natural disasters such as drought and also “unexpected emergencies.” The latter include technological accidents, which are specifically mentioned in the Policy, but are not the object of guidance statements. Unexpected emergencies might also include “human-driven” disasters and epidemics, neither of which is mentioned in the Policy.
- 3.14 Human-driven disasters are triggered by war, other expressions of conflict and acts of terrorism; they also include technological accidents and epidemics and cause losses of economic assets, injury and death, and social and political dislocation. Like natural disasters, they may be silent and “slow-moving” (the growth in the number of AIDS orphans in some countries is an example) or rapid-onset and spectacular. They may occur locally or far away but occasioning local losses such as the attack on the Twin Towers that affected tourist arrivals in some of the Bank’s borrowing countries.

²⁸ The Bank defines operational policies as “general directives whose purpose is to regulate the assistance provided by the Bank to its borrowers, define development strategies, and provide a high-level guide for operational decisions.”

²⁹ Document GN-2195-3 of July 2003.

³⁰ On the need for dissemination of the tenets of the Action Plan and the revised OP-704 see below.

- 3.15 As the Policy is revised, it will be necessary to clarify what emergencies it and the emergency response instrument under it (i.e., the IRF) are meant to address. The Bank commissioned in 2003 some of the work needed to develop technical definitions of different types of emergencies, including in particular so-called human-driven ones.³¹ It is recalled in this context that the amendments to the IRF that were approved by the Board of Executive Directors in 2003 left unresolved a number of issues to be revisited in the context of the current report—under the assumption that the IRF, presently an instrument governed by OP-704, would continue to be an instrument under the Policy once revised.³²
- 3.16 OVE’s position in this debate is one of agnosticism since what we are facing is a question of choice regarding the future rather than an ex-post evaluation task from which recommendations might be derived.³³ However, based on last year’s evaluation of the ERF and research done for the present report, the following can be suggested as a possible framework to assist in settling the debate:
- First, separate the IRF from OP-704; establish an independent guidance document on the IRF; limit the scope of OP-704 to natural disasters and possibly technological accidents (topics of sufficient developmental importance to warrant an Operational Policy); and place disaster risk management as discussed in this report at the center of the revised OP-704.
 - Second, limit the IRF to rapid-onset disasters. The Bank’s rapid response instrument for emergencies (the IRF) would, as its name implies, be limited to the coverage of sudden, or rapid-onset, calamities. While it seems appropriate that the IRF cover both “natural and unexpected disasters,” it would not be eligible for coming into play in response to slow-onset events, whether natural or man-made. Slow-onset, creeping crises and their manifestations, whether presenting themselves as symptoms of

³¹ See papers presented at the June 19, 2003, IDB Workshop on Human-Driven Disasters: Conflict, Terrorism, and Technology.

³² Document GN-2038-12 of April 24, 2003 on proposed amendments to the ERF was approved by the Executive Directors on June 18, 2003. With respect to the issue of scope it identifies the following as awaiting comment and review in the context of the present report, viz., (i) whether to expand the ERF to include “non-natural, non-market, unexpected emergencies” and (ii) what definition to apply to the concept of “other unexpected emergencies.” Under the assumption that the ERF will continue to be governed under OP-704 once revised, its definitive redesign is currently awaiting the outcome of discussion with respect to these two points. The expansion of the ERF to include “non-natural, non-market, unexpected emergencies” was mandated by the Board of Governors (Resolution AG-1/02 of March 1, 2002). Document GN-2038-10, approved by the Board of Executive Directors, however, cites “substantive reasons” (p. 3 of the Executive Summary) to postpone consideration of this expansion until the policy guidelines set forth in GP-92-15 (i.e., OP-704) are evaluated.

³³ The evaluation of Bank action later in this chapter is limited to the topic of *natural* disasters, the category of hazards in relation to which the Bank was active during the period covered in this report (1995-2002). Note that there are hardly any records of Bank activity related to technological or human-driven rapid-onset disasters in the past (in 1992, the Bank reformulated a loan in Mexico in response to a technological accident in the city of Guadalajara). As to human-driven disasters, the Bank has been active in the peace process in Central America and violence reduction in Colombia, and the re-engagement with Haiti is taking place at the present time. However, at stake here are long-gestation conflicts as opposed to sudden and unforeseen events. As such, these conflicts would not by the analysis presented in this section be eligible for “support” under the IRF.

poverty, deteriorating social cohesion, disease, civil conflict or drought would be addressed by other, longer-term instruments and means.

- Third, clarify the kinds of rapid-onset emergencies for which the IRF would be eligible. If the proposed limitation to sudden-onset emergencies is accepted, then the question is narrowed to what kinds of crises of this kind the IRF would cover. “Financial emergencies” (capital account crises) are covered by a special arrangement in the Bank, namely emergency lending as agreed by the Governors under the Lending Framework set out in Resolution AG-1/02 in 2002. Natural sudden-onset disasters and technological accidents are covered under the IRF and presumably will continue to be covered there. This leaves human-driven, unexpected sudden-onset crises to be “adjudicated” in terms of their eligibility under the IRF. These types of crisis include civil disturbance, local acts of terrorism, rapid-onset epidemics, and possibly unexpected and sudden local effects of international terrorism and conflict. A process should be set in motion to create the basis for a decision in this respect.³⁴

3. Awareness of the OP-704/Action Plan package, user feedback, and the disaster focal points

- 3.17 To effectively guide disaster risk management, Bank staff, field offices, and institutions in borrowing countries need to have an understanding both of the policy issues and the Bank’s guidelines and potential services in the sector. The field interviews conducted for this report suggest that this understanding is scarce, particularly in field offices and borrowing country institutions, although there are differences between offices and countries in this respect.
- 3.18 The interviews suggest that officials in relevant borrowing country institutions are not well informed about the spectrum of Bank services and instruments related to natural disasters. They tend to know more about the ERF than they know about disaster risk management techniques and the Bank’s ability to lend support in this respect, for example, through the Disaster Prevention Sector Facility (DPSF). Some respondents with knowledge of OP-704 noted that the Policy is less clearly defined with respect to prevention and pre-disaster risk mitigation than emergency response.³⁵
- 3.19 The field offices were in some instances not found to be effective points of transmission of the Bank’s policy guidelines and knowledge regarding disaster risk management (see below), with some Representatives offering the view that the role of the field offices is to provide program implementation services to countries rather than guiding them in developing policy and action strategies. *Respondents in government agencies were mostly*

³⁴ The draft Emergency Assistance Policy of the Asian Development Bank (April 2003) covers both civil conflict and natural disasters. The World Bank’s special emergency assistance framework (Bank Procedure BP 8.50) is not specific about the kind of emergencies that are covered. But the World Bank also has a Policy on development cooperation and conflict (OP 2.30). Institutionally, it has a Conflict Prevention and Reconstruction Unit with a work program on human-driven disasters.

³⁵ Representatives of countries that had used the ERF were very positive about the instrument’s ability to respond quickly to emergency situations—a judgment that may be partly rooted in the tendency to prefer reactive over proactive natural disaster strategies.

of the view that IDB had little effect on the development of national systems and policies for disaster prevention, but a small number indicated that Bank contributions had helped strengthen this aspect. In Nicaragua and Bolivia interviewees indicated that the Bank plays a role in providing continuity in disaster risk management in the face of frequent change in political and institutional priorities.

- 3.20 The use made of OP-704 and/or the Action Plan in operational decisions and activities related to natural disasters at the Bank is limited, except when it comes to preparing an operation under the IRF. As mentioned, staff are in general not conversant with risk management techniques and the Bank's guidance instruments, i.e., OP-704 and the Action Plan. However, for a number of years now there have been focal points for natural disasters in each regional department and SDS. The members of this group—the strongest operational chapter of which clearly resides in Region II—constitute a professional network of some consequence and importance in the Bank (Box 3.1).³⁶

Box 3.1. The Bank's Disaster Management Focal Points (DMFPs)

In 2000, DMFPs were established in each of the three operational departments, SDS/ENV and SDS/IFM with at least one professional acting as a point of contact in each Country Office.

The DMFPs' objectives are to support countries in the preparation of programs aimed at disaster prevention, mitigation, preparedness and emergency response, foster dialogue, coordinate activities between sectoral divisions and Country Offices, and promote knowledge and learning. At present, the DMFPs number 36 professionals (26 in Country Offices and 10 at Headquarters) with some 20 additional specialists representing different relevant sectors (transport, energy, water and sanitation, agriculture, housing, etc.). The DMFPs are an important institutional innovation, but the degree of integration of the groups and their traction in borrowing countries varies between the operational departments.

4. The Bank's instruments for dealing with natural disasters under OP-704 and the Action Plan

- 3.21 The Bank has special instruments for dealing with natural disasters in the form of the IRF and the Disaster Prevention Sector Facility that was created in 2001 to foster institutional change related to prevention (Table 3.1). Actual investment in prevention, mitigation and disaster preparedness, in turn, has to occur through regular loans and technical cooperation. To take out a loan for one of these purposes, a borrower has to be convinced that the costs of the loan are less than the potential benefit of prevented or mitigated losses. This determination is not straightforward. In fact, it is fraught with uncertainty,

³⁶ IDB 2002a, 2002b and 2002c describe the functioning of the focal networks composed of staff at headquarters and in field offices. In Central America, e.g. in-house expertise has been developed in the form of a multidisciplinary team that is capable of mobilizing itself immediately when a natural disaster looms or strikes. The team maintains continuous contact with the corresponding field office during an emergency and for a period thereafter and is a source of expertise and logistical support as Bank action is being prepared.

and uncertainty can be presumed to act as a disincentive on incurring debt for the purpose of strengthening prevention and mitigation. Uncertainty can be reduced by investment in improved data systems (Box 2.1), risk analysis, and risk assessment as called for in the present report. In the absence of efforts in this respect, it seems likely that investment decisions will be loaded in favor of recovery and rehabilitation/reconstruction.

TABLE 3.1
Bank instruments for natural disasters

Prevention		Mitigation		Preparedness		Immediate Response	Reconstruction	
Institutional Strengthening	Implementation	Institutional Strengthening	Implementation	Institutional Strengthening	Implementation	Implementation	Institutional Strengthening	Implementation
Disaster Prevention Sector Facility Regular TC	Incorporate into regular loans	Disaster Prevention Sector Facility Regular TC	Incorporate into regular loans	Incorporate into regular loans Regular TC	Incorporate into regular loans	Emergency Reconstruction Facility Emergency TC and loan reformulation	Regular TC	Incorporate into regular loans

C. Operational action and non-financial services

1. Country programming, disaster risk management, and the goal of risk reduction

- 3.22 It is stipulated in the Action Plan on natural disasters and argued in the previous chapter that vulnerability in a given hazard scenario is a function of development patterns and that disaster events cause important trend interruptions in development. If this is correct, it would seem appropriate for country programming in vulnerable (or “particularly vulnerable”) countries to take up the issue of risk reduction and to explain either the Bank’s envisioned role in this process or the absence of a role.

TABLE 3.2
Country papers and disaster risk management¹

Country	Natural Disaster Losses 1995-2002 US\$ billion	CP	YEAR	DRM part of development strategy/vision ²	“Prevention” mentioned
Argentina	12.95	GN-2140-1-E	2001		
Bahamas	0.57	GN-2141-1-E	2001		X
Barbados	0.16	GN-2051-1-E	1999		
Belize	0.35	GN-2019-2-E	1999	X	X
Bolivia	3.49	GN-2036-2-E	1999		
Brazil	17.48	GN-2104-1-E	2000		
Chile	4.17	GN-2134-1-E	2001		
Colombia	6.51	GN-2052-1-E	1999		
Costa Rica	1.09	GN- 1982-3-E	2000		
Dominican Republic	2.93	GN-2153-3-E	2001	X	X
Ecuador	2.55	GN-2169-1-E	2001		
El Salvador	5.08	GN-2121-3-Rev-S	2001		
Guatemala	3.36	GN-2149-3-E	2001		X
Honduras	2.70	GN-2070- 1-E	1999		X
Jamaica	3.04	GN-2025-E	1998		
Mexico	15.69	GN-2181-1-Corr-E	2002		
Nicaragua	2.73	GN-2230-1-E	2002		
Panama	0.12	GN-2136-1-E	2001		
Paraguay	0.15	GN-2118-1-E	2000		
Peru	3.94	GN-2205-1-E	2002		X
Suriname	n/a	GN-2080- 1-E	2000		
Uruguay	0.32	GN-2119-1-E	2000		
Venezuela	2.27	GN-2081-3-E	2001		
Guyana	0.03	GN-2228-1-E	2002		

¹ Most recent country paper in the period 1995-2002.

² DRM: disaster risk management

- 3.23 To verify the Bank’s approach in this respect, the most recent Country Paper (CP) produced during the 1995-2002 timeframe for each of 24 countries (all borrowers except Haiti and Trinidad and Tobago) was reviewed. As shown in Table 3.2, despite the presence of important disaster-induced economic losses in recent years in most cases, CPs almost never mention disaster risk reduction and risk management in the context of the development strategy discussion that (to a degree) is advanced in each of them. The

two exceptions to this rule, as per Table 3.2, are the most recent CPs for Belize and the Dominican Republic, respectively—in the case of Belize because much of the lending program is actually devoted to natural disasters; in the case of the Dominican Republic because economic and sector work done in the Country Office and at headquarters³⁷ and some planned lending made a good case for inclusion of the topic in the CP.

- 3.24 “Prevention” or the need to reduce vulnerability is mentioned in one-third of the CPs covered in the table, but is the subject of an analytical and/or action-oriented discussion in none. Thus, almost across the board the Bank’s official program statements at the country level fail to take disaster risk management and the reduction of vulnerability into account. The documents are silent about the reasons for glossing over this developmentally important problem.
- 3.25 A similar finding (i.e., failure to mention and address) is reached for a sample of recent Programming Mission Reports for the above countries:³⁸ disaster risk management is not an issue in these reports, even in the case of countries that had at the time of the respective writings been recent victims of disaster events.

2. Loan portfolio related to natural disasters

- 3.26 This section seeks to inventory the portfolio of Bank loans that are seemingly related to natural disasters and address the issue of the “relevance” of this portfolio. The task of establishing an inventory is less than straightforward because (i) loans declared as pursuing a natural disaster-related goal may also be pursuing other goals and (ii) loans not declared as addressing natural disaster-related issues may generate intended or unintended indirect effects that are relevant to the topic.
- 3.27 The first source consulted is the Bank’s Annual Reports from 1995 to 2002. From the loan descriptions in this source it appears that 11% of the approved projects during the identified period (70 out of 665 loans) for a total commitment of US\$3.8 billion were addressing natural disaster-related objectives (at times as part of a multiplicity of objectives): 7 for countries in the Caribbean, 36 for Central America, Mexico and Panama, 24 for countries in South America, and 3 for regional programs (cf. Table 3.3, in which this portfolio is classified according to the disaster category apparently being addressed).
- 3.28 The distribution of this portfolio of loans (geographically and by hazard category) is reminiscent of Figure 2.1, the map of losses from different types of hazards that was presented in Chapter II. For example, in the Caribbean, 58% of the full, approved loan commitments under the operations in question were seemingly assigned to problems related to windstorms, in rather close agreement with the data in Figure 2.1 that show high losses from this type of hazard in this sub-region. In Central America, seemingly, Bank lending gave greater relative preference to problems related to earthquakes than windstorms, the latter representing a more important source of damage than the former. In South America, 77% of commitments were dedicated to flood damage, which aptly

³⁷ Reflected in the report referred to in footnote 5.

³⁸ The purpose of these reports is to periodically update the country program.

reflects the importance of this type of hazard in the long term, although earthquakes and drought have in some cases in this sub-region caused considerable damage in the period covered in Figure 2.1.

- 3.29 However, the financial information in Table 3.3 is probably fraught with some error because the budget data available from the Annual Reports (and from the Loan Documents at the time of Board approval) represent aggregations that preclude a detailed and fully transparent analysis of intended expenditure categories. The portfolio represented in the table was discussed with the operational departments with a view to identifying a core set of projects satisfying the criterion of pursuing “materially” (as opposed to “indirectly” or “marginally”) a disaster-related role either in risk reduction of one form or another or emergency recovery and rehabilitation/reconstruction. The result of this discussion is the list of 49 operations approved between 1995 and 2002 that appears in Annex II.

TABLE 3.3
Apparent loan portfolio related to natural disasters, 1995-2002 (US\$ million)

Country	seemingly related to earthquake	seemingly related to windstorm	seemingly related to flood	seemingly related to natural disasters (general)	loan totals seemingly related to natural disasters
The Bahamas		21 (1)			21 (1)
Barbados			17 (1)		17 (1)
Dominican Republic		105 (1)		5 (1)	110 (2)
Guyana					
Haiti				27 (1)	27 (1)
Jamaica			16 (1)		16 (1)
Suriname					
Trinidad and Tobago				28 (1)	28 (1)
Total Caribbean		126 (2)	33 (2)	60 (3)	219 (7)
Belize		41 (2)			41 (2)
Costa Rica					
El Salvador	193 (5)			148 (4)	341 (9)
Guatemala				260 (7)	260 (7)
Honduras		211 (7)		28 (2)	239 (9)
Mexico			365 (1)		365 (1)
Nicaragua		73 (2)		125 (5)	198 (7)
Panama				15 (1)	15 (1)
Total Central America, Mexico and Panama	193 (5)	325 (11)	365 (1)	576 (19)	1,459 (36)
Argentina			550 (2)		550 (2)
Bolivia			26 (1)	66 (3)	92 (4)
Brazil			280 (4)	330 (2)	610 (6)
Chile					
Colombia	20 (1)		250 (1)		270 (2)
Ecuador			159 (3)	50 (2)	209 (5)
Paraguay			35 (1)		35 (1)
Peru	20 (1)		270 (2)		290 (3)
Uruguay					
Venezuela			20 (1)		20 (1)
Total South America	40 (2)		1,590 (15)	446 (7)	2,076 (24)
Regional				57 (3)	57 (3)
Overall Total	233 (7)	451 (13)	1,988 (18)	1,139 (32)	3,811 (70)

Source: IDB Annual Reports

(): number of projects seemingly related to natural disasters

- 3.30 This set of projects for a total Bank commitment of US\$3.2 billion appears to be distributed as follows over the three functional categories of intervention that are of interest to the present discussion: in 53% of the loans the intended natural disaster-related component is to a certain extent devoted to prevention or mitigation; in 16% of the loans it is devoted to emergency response; and in 31% of the loans it is devoted to rehabilitation and reconstruction (Table 3.4). In financial terms, as shown in the table, a larger share of total project resources is devoted to emergency response and

reconstruction than is devoted to prevention (59% versus 41%). The corresponding figures for the IDB amount (as opposed to the total project amount which also includes the borrower's contribution) are 53% and 47%, indicating within the margin of accuracy of the data that the Bank, to its credit, devotes attention—more so than the borrowers in the context of these loans—to investment activity centered on prevention and mitigation and thus the reduction of risk.

TABLE 3.4
Apparent functional distribution of 49 natural disaster-related loans,
1995-2002

Function	Number of loans	% of loans	Natural disaster % of project amount	Natural disaster % of IDB amount
Prevention/Mitigation	26	53	41	47
ERF/Emergency Response	8	16	6	7
Rehabilitation/Reconstruction	15	31	53	46
Total	49	100	100	100

Source: Annex II

- 3.31 Thus, what we are witnessing in terms of the operational portfolio is compatible with OP-704 in the sense that Bank lending related to natural disasters addresses needs in each of the three periods surrounding disasters (before, during, and after). At the same time, post-disaster payments (at least when measured in terms of total project resources) represent the main functional category as expected on the basis of the analysis in Chapter II.
- 3.32 As to the results being obtained by means of this collection of loans, the section on evaluability below raises concern in the sense that the results frameworks of many of the loans are weak and the PPMRs are not very revealing regarding the material progress being achieved under the operations. In fact, the PPMRs (as indicated below) do not meaningfully track progress, leaving one at a loss with respect to the question of results and the appropriateness of the trajectory that is supposed to deliver the outcomes being pursued
- 3.33 The instrument of the DPSF, specifically created to strengthen disaster prevention and risk management systems, has not been in much demand in the three years since it was created. Two loans have been extended under the Facility (DR-0145 and BO-0206), and both are experiencing problems. In fact, the loan to the Dominican Republic was canceled in June 2003 because contrarian institutional and legislative developments made its further implementation impossible. The loan to Bolivia, which has not started to disburse, is in the most recent PPMR classified as “improbable” as far as the achievement of its objectives are concerned, the difficulties encountered reportedly having to do with unresolved issues related to the conception of policy and the role of the military in emergency management.

3. Evaluability

- 3.34 Twenty loans from the above collection of 49 operations were examined for their ex-ante and ex-post evaluability following OVE's by now well established methodology. The twenty loans include twelve non-ERF projects that make unambiguous reference to natural disasters in their titles and eight other non-ERF projects that were randomly chosen among those that do not make a clear allusion to natural disasters in their titles.

- 3.35 Analysis of these twenty projects showed that loan documents display a low level of evaluability ex-ante, i.e., at the project design stage (Table 3.5).³⁹ Evaluability was assessed for both project “outputs” or immediate results and project “outcomes” or development impact. The results show unambiguously (but not surprisingly) that the evaluability of outcomes is much lower in this sample of loans than that for outputs.⁴⁰

TABLE 3.5
Evaluability indices for natural disaster-related projects (1995-2002)

Region	Ex-Ante Evaluability Index ¹	Ex-Post Evaluability Index ¹
1	0.48	0.21
2	0.42	0.18
3	0.46	0.16
TOTAL	0.45	0.18

¹ Index runs from 0 (not evaluable) to 1 (fully evaluable).

- 3.36 Evaluability is also low at the ex-post stage—in fact as shown in Table 3.5 it is considerably lower at that stage than at the ex-ante stage. This means that it is difficult (indeed given the low ex-post values in Table 3.5 next to impossible) to know from the Bank’s project monitoring system whether a project is on track towards meeting its goals.⁴¹ PPMRs are particularly striking in not providing information about natural disaster-related project components in the case of multipurpose projects that combine natural disaster-related objectives with other purposes. The Bank is almost bereft of data to gauge the implementation progress of natural disaster-related lending.

4. Efficiency of delivery

- 3.37 A number of different metrics for gauging the efficiency of delivery of the natural disaster-related portfolio were analyzed for the present report. Thus, for example, for our portfolio of natural disaster-related projects the time interval from Profile I to Board approval (14.6 months) is considerably less than that for all 1991-2002 IDB investment loans (20.2 months). Time from Board approval to contract signature is similarly found to be shorter, as is time from contract signature to eligibility for first disbursement.⁴² Hence, while the evaluability of the Bank’s natural disaster-related portfolio of loans is low, the

³⁹ The Ex-Ante Evaluability Index measures the degree of evaluability of a project at approval based on information in the loan document that is taken at face value. For each project a results matrix is drawn up, mapping objectives, proposed metrics, baselines, milestones, and targets. Each concept is classified as either an output or an outcome. Rows are defined as project objectives and columns as metrics, baselines, milestones and targets. The matrix is binary: when verifiable information is provided, cells are scored with ones (“1”); in the absence of information or when information is inappropriate, cells are scored with zeros (“0”). The index is the sum of all cells with an entry of 1 to the sum of total cells in the matrix.

⁴⁰ This is demonstrated in the full report on evaluability done for the present study (Jales 2003). The report (which among other aspects informs about the differences in evaluability of different sub-groups of loans) is available from OVE on request.

⁴¹ The Ex-Post Evaluability Index describes the degree of evaluability of a given project during implementation. It is based on information provided by the most recent PPMR and constructed similarly to the Ex-Ante Evaluability Index.

⁴² Detailed tabular and graphic analysis on project cycles and disbursement efficiency available from OVE on request.

efficiency of delivery of this class of operations is high, i.e., above the average for all Bank loans, possibly reflecting the emergency response and the rehabilitation objective embodied in this group of projects, which can be expected to lead to accelerated disbursements.

5. Loan reformulation and mission risk

- 3.38 The IDB (like the World Bank) may reassign resources from existing loans to other projects or spending needs under certain circumstances, including in particular emergency situations prompted by natural disasters. OP-704 provides for the possibility of reformulation in such situations if new spending priorities appear to call for it.
- 3.39 However, OP-704 does not spell out rules to guide the approach to and the process of reformulation. Together with information gleaned from interviews with Bank staff regarding reformulation, this suggests that the operational departments handle this issue with some discretion.⁴³ The interviews also indicate that when the apparent need for reformulation arises, little consideration is given to the issue of mission risk or the opportunity cost implicit in the abandonment of the reformulated project's initial objectives.⁴⁴ Ideally, reformulation would be guided by a cost-benefit analysis that would compare mission risk with the benefits of reformulation when an emergency is at hand. This is not done, implying that the Bank and the borrower operate in the dark with respect to the overall benefit being derived from an episode of reformulation. As noted below, one criterion used in choosing candidates for reformulation is to look for projects that are not disbursing. As far as OVE could determine, the at least equally appropriate but more complicated question of what projects are not performing in terms of their development objectives is not asked.
- 3.40 The Bank takes into account a number of elements (or goes through a number of steps) in deciding how and when to reformulate/reallocate loans in response to a natural disaster: (i) portfolio review to determine if there are problem projects whose reformulation would not negatively affect the current (typically already scaled-down) expected results;⁴⁵ (ii) tally of the undisbursed balances of reformulation candidates (typically, a target amount is "pieced together" from different sources); and (iii) discussion of the list with the borrowing government and the executing agencies (projects, amounts to be considered, and conditions under which the transfers would be made). In this process, the possibility of new lending and the use of the ERF is likely to be considered also, which together with the reformulations will determine the nature and extent of the streamlined support made available to the disaster-stricken country. Just as there is no explicit assessment of

⁴³ To review the extent to which the mechanism of reformulation is used in emergency situations due to natural disasters and to gain an understanding of the *process* of reformulation, information was requested from Country Offices and staff at headquarters. The information supplied by Country Offices varied greatly as far as the level of detail provided was concerned. However, OVE believes that enough information was gathered to draw conclusions that could at the same time serve as a basis for a more comprehensive review and in-depth analysis in the future.

⁴⁴ On the notion of mission risk see Clarke and Doherty (2001) who first used the term in the context of programs supported by international financial institutions.

⁴⁵ There may be cases in this category where the reformulated resources' opportunity cost is low.

mission risk, there is no explicit review of any credit risk implications that the accelerated disbursements and possible new lending may entail.

- 3.41 On the procedural side, the compatibility of the original and the reformulated loan objectives and circumstances determines the level of authority that will approve the modification. Board approval is required if the proposed change (i) substantially alters the purpose, borrower, or guarantor of the operation; (ii) increases the amount of the Bank's financing; (iii) changes the source of funds; or (iv) constitutes a significant exception to Bank policies.⁴⁶ In all other cases, loan modifications are approved by Management, the level of approval within Management (Manager, Representative, Division Chiefs) depending on the amount to be reformulated and the characteristics of the new uses of the funds.
- 3.42 A review of the loans reformulated during 1995-2002 (partial list in Table 3.6) suggested an inclination to select operations that ostensibly will continue to disburse in the same sector in order to avoid approval processing that could delay the redirection of funds. Also, at times, the selection of projects for reformulation may be influenced by considerations related to bidding and procurement: in some of the cases reviewed, the reassignment of funds appeared to create an opportunity for speeding up the operation by taking advantage of the Bank's simplified emergency procurement rules.

TABLE 3.6
Loan reformulation on natural disasters, 1995-2002 (preliminary)

Country	Loans	Amount (US million)	Comments
AR	795/OC-AR	35.0	Approved by the Board of Executive Directors. Problems with the execution of the emergency program.
BL	1189/OC; 1211/OC-BL	2.0	Approved by the Board of Directors. Good execution.
CO	774/OC; 863/OC; 1075/OC	133.7	All transfers approved by the Board of Directors.
EC	596/OC-EC; 874/OC-EC; 892/OC-EC; 978/OC-EC; 834/SF- EC; 900/SF-EC; 913/SF-EC; 919/SF-EC	34.2	Approvals were made by Board of Directors. Execution of projects could be rated as normal.
ES	731/OC-ES; 838/OC-ES; 839/OC-ES; 840/OC-ES; 886/OC-ES; 919/OC-ES; 920/OC-ES; 1041/OC-ES; 1067/OC-ES; 1092/OC-ES; 1004/SF-ES; 1100/OC-ES	169.2	Approvals by Board of Directors. Execution of emergency projects could be rated as normal. Loans included by the Country Office in this table are only those that had transfers approved during the first half of 2001.
HO	906/SF-HO; 981/SF-HO; 1024/SF-HO; 1029/SF-HO; 1037/SF-HO;	59.2	Two of these reformulations (US\$7.0 million) were approved at the level of the Regional Manager and the other 3 loan reassignments were approved by the Board of Directors.
PE	1150/OC-PE	2.5	Approved by Management. Program execution shows delays as compared with the original schedule.
VE	696/OC-VE; 732/OC-VE; 779/OC-VE; 818/OC-VE; 928/OC-VE	154.4	Of the total amount reassigned, only US\$13.7 were disbursed. The borrower did not sign the amendments of two of the 5 contracts for an amount of US\$100 million. The reassignments had a negative impact in those loans that finally maintained the original amounts. Reassignments were approved at the Regional Manager level.

Source: IDB. Countries not included in this table reportedly have no identified emergency programs with reassignment of resources from existing loans.

⁴⁶ See OA-420 "Table of Authority for Investment Loans" (July 2002), p. 5.

- 3.43 The precise destination of the reformulated resources is not spelled out in the documentation that accompanies the request for approval of the reformulation. The resources are typically said to be devoted to the on-going rehabilitation/reconstruction effort, augmenting monies made available through the IRF and possibly other loans. But, as determined by OVE, detailed, functional budgets governing the deployment of the reformulated funds are not constructed. The PPMRs, in turn, are not informative about the use of reformulated funds and the results thereby obtained.⁴⁷
- 3.44 Given the rapidly evolving conditions after a disaster it is understandable that the Bank not employ the same procedures for the processing of emergency loans and loan reformulations as are required for regular operations. However, the above discussion suggests that it is appropriate for the sake of consistency, transparency, and lesson learning to review the processes governing reformulation and to put in place systems that permit the tracking of results. In addition, it is not remiss to suggest that the reformulation exercises should make reference to and try to assess mission risk, thereby creating conditions for more informed decisions on the part of the approving authorities and relevant stakeholders at large.

6. Technical cooperation and non-financial products

- 3.45 In 1995-2002 the Bank supported 47 natural disaster-related technical cooperation projects (TCs) with a Bank contribution equal to or greater than US\$150,000 each (Annex III).⁴⁸ Table 3.7 shows that this group of larger TCs is clearly (and more heavily than the loan portfolio reviewed earlier) weighted in favor of disaster prevention and mitigation. Following disaster events in 1998 and 1999, the bulk of TC approvals favoring prevention occurred between 1999 and 2001 (23 out of 33 projects, cf. Annex III). From the data, we conclude that the Bank takes recourse to TCs to foster work meant to support prevention, taking advantage of the grant-funded nature of this instrument, which provides incentives to borrowing countries. Much of this work, however, is in the nature of *ad hoc* efforts. With the possible exception of Belize, OVE did not find evidence anywhere that the Bank fostered a systematic and comprehensive approach to risk reduction in which context one would be able to judge the intended role and contribution of the TCs undertaken.

TABLE 3.7
Apparent functional distribution of 47 natural disaster-related
technical cooperation projects 1995-2002*

Function	Number of projects	% of projects	% of project amount	% of IDB amount
Prevention/Mitigation	33	70	78	73
Emergency Assistance	4	8	5	6
Rehabilitation/Reconstruction	10	22	17	20
Total	47	100	100	100

* TCs ≥ US\$150,000

Source: Annex III

⁴⁷ External financial audits for the list of projects in Table 3.6 were carried out incompletely during 1998-2002: only 59% of the projects had an EFAS annually; 9% had no EFAS.

⁴⁸ This list does not cover smaller TCs. Among those, operations for up to US\$50,000 frequently made available by the Bank as a gesture of solidarity when disaster strikes are the most important kind.

- 3.46 As to non-financial products, it is noted that the topic of natural disasters has given rise to a considerable program of studies and outreach activities sponsored by the Bank, and to Bank participation in a series of regional initiatives as summarized in Annex IV. The analytical work sponsored by the Bank covers aspects of disaster risk management and financial practices (including work on insurance markets and risk transfer), the program for the development of disaster information and indicators that was referred to in Chapter II, an effort to develop checklists on disaster risk management for consideration by sector specialists in the Bank, and continuous lines of cooperation and knowledge sharing with other agencies.
- 3.47 In the judgment of this evaluation, this envelope of activities has played an important role in deepening the Bank's understanding of disaster risk management and in building some of the in-house capacity that is needed to extend advice to the borrowers. The focal points referred to earlier ensure a certain amount of communication between specialists in SDS and the operational departments. However, whether this is enough for the mainstreaming of disaster risk management into country programming and Bank operations is doubtful: evidence presented earlier indicated that despite the non-financial services coordinated by SDS, disaster risk management rarely "makes it" into country programming, and prevention, mitigation, and preparedness (though important in the loan portfolio linked to natural disasters) come in second as compared with the effort devoted to emergency response, rehabilitation and reconstruction. Interviews with Bank staff suggest the presence of a gap between Bank operations that focus disproportionately on the latter types of interventions and a more integrated approach to disaster risk reduction that may help provide more effective long-term solutions for borrowing countries with high vulnerability.
- 3.48 Another manifestation of discontinuity emerges when one considers the above activities at headquarters and the awareness and capacity to absorb of the borrowers. The Regional Policy Dialogue or RPD (a program for senior policy makers from the Region devoted to seven strategic topics, one of which disaster risk management) is intended to play a role as a platform to discuss experience and good practice in this area.⁴⁹ While OVE views the RPD as a potentially important venue, the sessions devoted to natural disasters also point up the difficulties of developing a senior professional community to deal with the issues at hand: attendance at the three sessions held so far ranged between fifteen to eighteen participants from the Region with seven people participating in at least two meetings and three participating in all three of them. Attendance therefore is somewhat discontinuous, the reasons given to explain this situation including "change of government" and "lack of travel funds."⁵⁰
- 3.49 All told, however, a recent evaluation commissioned by the sponsoring Integration Department cites favorable feedback from participants as far as the usefulness of the sessions devoted to disaster risk management is concerned. Participants indicated for example that the sessions had helped them identify opportunities and suggestions that can

⁴⁹ A number of the studies listed in Annex IV were prepared to inform successive sessions under the RPD.

⁵⁰ Sixteen events on natural disasters other than the RPD, sponsored or co-sponsored by the IDB between 2000 and 2003, drew a total of at least 1,800 participants according to data supplied to OVE by SDS.

be applied in their countries, leading the evaluation to conclude that the results justify the continuation of the process even if not all of the studies prepared and presented were unanimously believed to be relevant by the participants.⁵¹ The evaluation presented no evidence to the effect that good practice discussed in the context of the Dialogue had found its way into national policy making.

D. Recapitulation

- 3.50 The purpose of this chapter was to develop answers to the questions formulated in paragraphs 3.2, 3.3, and 3.4 above. To recapitulate, following a slightly different order, our review of OP-704 concluded that the Policy does not adequately reflect the integrated approach to disaster risk management that is needed to assist borrowing countries in dealing with the challenges posed by natural disasters. The review also found that there is confusion when it comes to the Policy's scope (i.e., the kinds of natural and unexpected disasters that it and the IRF should cover). A framework to think through the issues was offered in Section B above. With respect to the Action Plan, the review found that it projects an adequate conceptual and risk management framework, but is not a "plan" in the sense of committing the institution to the pursuit of specific, agreed and monitorable goals.
- 3.51 Our review of the Bank's operational action and non-financial services found that the Bank is active in the field of natural and unexpected disasters, covering aspects of prevention and devoting resources to emergency response and rehabilitation / reconstruction. The operational portfolio is compatible with OP-704 in the sense that (as stipulated in the Policy) it addresses needs in each of the three periods surrounding disasters (before, during, and after). But in following the borrowing countries and responding to their short-term needs as it must, the Bank supports what some have called a post-disaster payment strategy at the expense of greater attention devoted to risk reduction. Not only does vulnerability remain inadequately addressed, it is also compounded by the emergence of mission risk because the post-disaster diversion of resources to emergency response and reconstruction involves opportunity costs as other projects, including investments in risk reduction and the fostering of enabling conditions for risk transfer, are crowded out.
- 3.52 Overall, the Bank's contribution to "help strengthen the incentives and capacities for risk management in the framework of the risk cycle in Figure 2.3 and to help prepare the ground for efficient forms of risk transfer and financing" (paragraph 3.2) is timid. The Bank fails to incorporate risk management into country programming. It does devote TCs to prevention and preparedness, and it does make knowledge contributions at the regional level, fostering dialogue among policymakers. TCs can be important inasmuch as their grant-funded nature creates incentives for borrowers. But TCs tend to arise in an *ad hoc* manner, usually in response to emergencies. And the Bank's knowledge contributions as well as the Regional Dialogue, on the other hand, are unconnected to programming and operations. The promising institutional arrangement of the Disaster Management Focal Points is not functioning as a transmission belt between the Regions, the Center (i.e., the

⁵¹ IMCI 2003.

Sustainable Development Department), and borrowing countries and has not operated forcefully as an advocate for the needed shift from a reactive to a proactive approach.

E. Game theory and the shift to disaster risk management

- 3.53 Disaster risk management is about changing behavior towards a better balance between investment in prevention and preparedness, on the one hand, and post-disaster payment, on the other. Game-theoretic frameworks devised to plot competitive strategy in the private sector may be helpful for the Bank to think through processes of behavioral change towards proactive risk management starting with the Bank itself and extending to borrowing countries. One such framework discussed in the literature is called PARTS: players, added value, rules, tactics, and scope.⁵² Players in the present context might mean the involvement of all stakeholders; added value would refer to what the Bank has to bring to the table (knowledge, programming, instruments and services that are in tune with needs and provide the right incentives); rules may refer to an agreement to limit funds, after a moratorium, for borrowers unwilling to prevent and prepare; tactics may have to do with the distribution of benefits among stakeholders; and scope would refer to all the required linkages in risk management (financial services industry, building codes, etc). Arguably, a successful shift towards disaster risk management would begin by assessing and then adapting each of these elements with a view to progressively improving the risk management position. PARTS, thus, provides the tools and a way of thinking about changing behavior that would seem worth pursuing given the importance of the problem of intermittent natural disasters that the Bank faces with regularity.

⁵² Brandenburger and Nalebuff 1995.

IV. CONCLUSION AND RECOMMENDATIONS

- 4.1 Natural disasters are an important and growing development problem in LAC. They represent a challenge to which the IDB has not yet developed an adequate response. The Bank's guidance statement on natural and unexpected disasters, OP-704—while an improvement over previous versions—does not adequately reflect the integrated approach to disaster risk management that is needed to assist borrowing countries in dealing with the difficulties posed by natural disasters. As discussed in this report, there is, in addition, some confusion with respect to the scope of OP-704 and the Bank's Immediate Response Facility for Emergencies Caused by Natural and Unexpected Disasters (IRF), which falls under the purview of OP-704. The Bank's Action Plan on natural disasters, on the other hand, is grounded in a comprehensive conceptual risk management framework. But it does not commit the Bank to a resourced and monitorable program of work towards specified, agreed goals. This evaluation therefore concludes that OP-704 and the Action Plan should be revised. Recommendations to this effect are formulated below.
- 4.2 The Bank is frequently called upon to respond to natural disasters. Its response tends to be reactive rather than proactive. It plays an important role as a source of funds for emergency response and rehabilitation/reconstruction. Some of these funds derive from the reformulation of already approved loans. The Bank also fosters prevention and preparedness through loans and technical cooperation. Three years ago it created the Disaster Prevention Sector Facility to support institutional change related to prevention—for which there is little demand. Rarely, however, has the Bank engaged in disaster risk management in a comprehensive sense of the term. With one or two exceptions, risk management was not a topic in country programming between 1995-2002 even in the case of highly vulnerable borrowers. It is also not a topic at the project level where evaluability in the natural disaster-related loan portfolio is so low as to make it nearly impossible to track results. This evaluation therefore concludes that the Bank should revisit its approach to natural disasters. Recommendations to this effect are formulated below.
- 4.3 The Bank maintains an active program of studies and outreach with respect to natural and unexpected disasters. Yet its knowledge contributions and the Regional Policy Dialogue on natural disasters and disaster risk management are unconnected to operations. The promising institutional arrangement of the Disaster Management Focal Points is not functioning as a transmission belt between the Regions, the Center (i.e., the Sustainable Development Department), and borrowing countries and has not operated forcefully as an advocate for the needed shift from a reactive to a proactive approach. The evaluation therefore concludes that the Bank needs to rethink the way it is organized to deliver with respect to natural and unexpected disasters. A game-theoretic process may help. Again, recommendations regarding the question of the Bank's approach are formulated below.
- 4.4 The question of what financial incentives the Bank might offer to induce investment in prevention, mitigation and preparedness is not straightforward under the assumption that

differential pricing of some sort (lower loan charges on funds targeting risk reduction) is not politically an option in the “cooperative” that is the IDB. The use of grant-funded technical assistance as the current instrument of choice for working on risk reduction demonstrates that the demand for greater security is price-responsive. But this evaluation also identified a non-financial obstacle to action in risk reduction, i.e., uncertainty regarding where one stands with respect to what the report defines as the optimum level of security—leading to uncertainty with respect to what to do. Here, the Bank could do much, and in the judgment of this evaluation much more than it has been doing, to build a learning community involving the borrowers, invest in knowledge such as vulnerability assessments, and link these functions to programming at the country level, budget allocation decisions, lending strategies, and assistance in the form of technical cooperation that would support these strategies. One consideration in this context is the need to prepare the ground for increased private participation in different forms of risk transfer in borrowing countries—risk transfer through insurance markets and other mechanisms being key in alleviating the disaster-related financial burden that has traditionally been carried by governments.

4.5 The following recommendations are designed to support change as implied by these conclusions:

1. OP-704: Revise and update OP-704. In this context: place disaster risk management at the center of the revised OP-704; limit the scope of OP-704 to natural disasters and technological accidents; provide for Bank action to strengthen the incentives and capacities for risk management in highly vulnerable countries and to prepare the ground for efficient forms of risk transfer and financing; make the revised OP-704 or a derived instrument such as a revised version of the Action Plan goal- and results-oriented (include baselines and targets); provide for linkages between the revised Bank-wide Policy and individual country strategies.
2. IRF: Establish an independent guidance document on the IRF. Limit the IRF to rapid-onset emergencies not covered by other Bank instruments. Establish a process such as a Working Group to clarify the range of rapid-onset emergencies for which the IRF should be eligible.
3. Approach: Modify the Bank’s disaster risk management stream of business from one that is predominantly reactive to one that accommodates an appropriate level of risk reduction. Where appropriate, create financial incentives, for example, through innovative combinations of lending and grant-based financing. Consolidate activities related to natural disasters commensurately with the threat to development embodied in disaster risk.
4. Organization: Develop an organizational alternative capable of assuring integration, synergy, and the functioning of a transsectoral learning community involving all stakeholders. Strengthen the Disaster Management Focal Points as the spearheading community for the institutional shift towards a more proactive stance, focused on country programming and strategies.

5. Operations: Introduce disaster risk management into country programming for highly vulnerable countries. Develop training and guidelines for project teams to incorporate the concept of integrated risk management in loan preparation and execution work. Develop guidelines for a transparent process of loan reformulation, including methods to make explicit the mission risk or opportunity costs associated with reformulation. Design interventions for evaluability.
6. Reporting: Report to the Bank's Executive Board on progress in institutionalizing and mainstreaming risk management related to natural and unexpected disasters.

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The ten worst natural disasters in LAC (1900-2002)*

Country	Type	Year	Fatalities	Note
Peru	Earthquake	1970	66,794	Mount Huascarán (7.8 Richter)
Guatemala	Flood	1949	40,000	East Guatemala
Martinique	Volcano	1902	30,000	Mt Pelée
Chile	Earthquake	1939	30,000	South Central Chile (8.3 Richter)
Venezuela	Flood	1999	30,000	Vargas state (350km ²)
Guatemala	Earthquake	1976	23,000	Guatemala City (7.5 Richter)
Colombia	Volcano	1985	22,800	Nevado del Ruiz
Honduras	Windstorm	1998	14,600	Hurricane Mitch
Nicaragua	Earthquake	1972	10,000	Managua (80% of the capital's buildings destroyed, 6.2 Richter)
Argentina	Earthquake	1944	10,000	San Juan (7.8 Richter)

Country	Type	Year	Damage US\$ (million)	Note
Chile	Earthquake	1939	11,881	South Central Chile (8.3 Richter)
Mexico	Earthquake	1985	6,673	Mexico City (8.1 Richter)
Brazil	Drought	1978	6,332	Central and Southern
Caribbean	Windstorm	1989	5,181	Hurricane Flora
Nicaragua	Earthquake	1972	3,629	Managua (80% of the capital's buildings destroyed, 6.2 Richter)
Chile	Earthquake	1953	3,361	Central (7.6 Richter)
Chile	Earthquake	1960	3,335	World's strongest recorded earthquake (9.5 Richter); tsunami 30ft
Guatemala	Earthquake	1976	3,155	Guatemala City (7.5 Richter)
Colombia	Earthquake	1999	3,125	El Quindío (6 Richter)

Source: Charvériat, 2000; EM-DAT, 2003; UNEP/APELL, 2003

* Ranked according to fatalities and economic losses.

The ten worst technical disasters in LAC (1900-2002)*

Country	Type of technical disaster	Year	Damage US\$ (million)	Fatalities	Note
Mexico	Industrial accident	1996	1,144	6	Chiapas State
Brazil	Transport accident	1988	501	0	Campos basin, Enchova
Mexico	Industrial accident	1992	384	200	Guadalajara
Colombia	Industrial accident	1956	264	2,700	Cali
Peru	Transport accident	1996	63	70	Pacific, near Lima
Mexico	Industrial accident	1995	53	0	Tula
Brazil	Industrial accident	1984	52	36	Rio De Janeiro
Ecuador	Explosion	2002	50	8	Riobamba
Colombia	Fire	1966	44	1	Quibdó (Choco department)
Mexico	Industrial accident	1992	38	0	Tultitlán

Source: EM-DAT, 2003; Rojas Gutierrez, 2003; UNEP/APELL, 2003

* Ranked according to economic losses.

Portfolio of 49 natural disaster related loans, 1995-2002

Loan #	Title	Country	Year	Classification	Total Project Amount US\$ (1000s)	IDB Loan Amount US\$ (1000s)	% disbursed IDB loan as of Dec 2002	Natural Disaster %1	Loan Objective	Comments
AR-0136	Environmental Management of the Matanza-Riachuelo River Basin	Argentina	1997	Prevention	500,000	250,000	12.11%	72%	To improve management of the Matanza-Riachuelo Basin's natural resources through coordination of environmentally related actions. Four sub-programs: (1) industrial pollution control; (2) flood control works; (3) solid waste mgmt; and (4) urban rehabilitation.	The program will provide critical drainage and flood works, and will largely resolve the flooding problem in the most flood prone areas.
AR-0242	Emergency Flood Rehabilitation Program	Argentina	1998	Rehabilitation/ Reconstruction	500,000	300,000	68.61%	100%	To provide support for the economic and social recovery of affected zones through activities to attenuate the impact of the flood, reconstruction and rehabilitate economic and social infrastructure, and mitigate damage from similar catastrophes in the future.	Three components of the program: (1) Mitigation (\$30 mn.) (2) Reconstruction (\$430 mn.), and (3) Prevention (\$5 mn.).
BA-0019	Coastal Infrastructure Program	Barbados	2001	Prevention	24,200	17,000	....	59%	To support the sustainable development and improvements for shoreline preservation and management.	Global and regional changes and their effect on the coastal environment of Barbados are related to fluctuations in temperature, oceanographic current circulation, meteorological variations and natural hazards from hurricanes and tropical storms.
BH-0031	Infrastructure Rehabilitation Program	Bahamas	2001	Rehabilitation/ Reconstruction	43,000	30,000	32.80%	100%	Rehabilitation of basic infrastructure damaged by Hurricane Floyd.	Phase I - rehabilitation or reconstruction of specific works damaged or destroyed by Hurricane Floyd Phase II - includes other specific works designed to replace works that have been repeatedly damaged by storms over the years.
BL-0015	Hurricane Rehabilitation and Disaster Preparedness	Belize	1999	Prevention	32,222	21,333	27.22%	100%	To reduce the country's vulnerability and improve its response capacity to natural disasters.	The program has two components (1) a structural component that addresses measures needed to reduce the vulnerability of Belize to damages from winds, rains and storm surge; (2) an institutional component.

BL-0018	Emergency Reconstruction Facility Following Hurricane Keith in Belize	Belize	2000	ERF	25,000	20,000	100.00%	100%	To restore basic services to the population affected by Hurricane Keith.	The project will provide resources for urgent activities needed to restore services to the affected population including: the removal of debris, repair and stabilization of damaged roads, bridges, drainage structures and city streets.
BO-0040	National Irrigation Program (PRONAR)	Bolivia	1995	Prevention	32,900	25,600	58.92%	100%	To bring about an institutional and legal rearrangement of the water-resources sector and the irrigation subsector to create the requisite elements for managing and coordinating actions in the subsector, enhance the efficiency of investments and foster the rational and sustainable use of water resources.	
BO-0098	Improvement Program For The Ventilla-Tarapaya Highway and Transportation Sector Support	Bolivia	1999	Rehabilitation/ Reconstruction	71,000	52,000	23.26%	1%	To help improve the competitiveness of the country's productive sectors, in the context of growing domestic and international trade, by enhancing the level of service on the basic highway system, and reducing costs for users. Specifically, to upgrade the characteristics and structural capacity of the Ventilla-Tarapaya-Potosi section, by undertaking roadway improvements, paving and rehabilitation, and increasing the usability of its access roads, in accordance with proper safety standards.	Provides the possibility to conduct studies to identify vulnerable areas, however does not discuss any specifics.
BO-0206	Disaster Prevention Program	Bolivia	2002	Prevention	3,000	2,700		100%	To help the Bolivian government to operate its national disaster prevention and risk reduction system (SISRADE) more effectively. Specifically, (1) strengthen the institutional structure of SISRADE, and (2) to raise public understanding of risk.	
BO-0217	Emergency Support for Water Production at the Sama Mountain Biological Reserve in Tarija	Bolivia	2002	ERF	2,778	2,500		100%	To provide Bolivia with the resources necessary to cover the immediate costs of restoring water services to the population of the communities affected by the fire at the Sama Mountain Biological Reserve in Tarija.	Project components: (1) Restore quantity and quality of potable water supply - \$1 mn. (2) Restoration of water production capacity in Sama Mountains - \$874,000 (3) Studies to assess damage and prevent disasters - \$260,000 (4) Project Mgmt. - \$400,000

BR-0234	Flood Control Program in Campinas	Brazil	1996	Prevention	33,000	19,800	100.00%	100%	To reduce the damage caused by flooding in the city of Campinas, thus helping to improve the city's socio-economic and environmental situation, particularly the living conditions of families residing along the banks of watercourses.	No mention specifically of natural disasters, however the primary objective is to mitigate damage caused by flooding.
CA-0034	Tri-National Program for Sustainable Development in The Upper Lempa River Basin	El Salvador	2001	Prevention	17,500	14,000	....	7%	To improve the quality of life of the inhabitants of the upper Lempa River basin, through actions that promote sustainable development in the target area and that seek to break the cycle of poverty and destruction of natural resources.	Disaster prevention and mitigation including two sub-components: (i) Interventions at the subbasin level, restoration of degraded areas and protection of vulnerable areas; and (ii) Prevention, early warning, and monitoring systems for natural phenomena.
CA-0034	Tri-National Program for Sustainable Development in The Upper Lempa River Basin	Guatemala	2001	Prevention	7,000	4,500	....	19%	To improve the quality of life of the inhabitants of the upper Lempa River basin, through actions that promote sustainable development in the target area and that seek to break the cycle of poverty and destruction of natural resources.	Disaster prevention and mitigation including two sub-components: (i) Interventions at the subbasin level, restoration of degraded areas and protection of vulnerable areas; and (ii) Prevention, early warning, and monitoring systems for natural phenomena.
CA-0034	Tri-National Program for Sustainable Development in The Upper Lempa River Basin	Honduras	2001	Prevention	6,795	3,300	....	19%	To improve the quality of life of the inhabitants of the upper Lempa River basin, through actions that promote sustainable development in the target area and that seek to break the cycle of poverty and destruction of natural resources.	Disaster prevention and mitigation including two sub-components: (I) Interventions at the subbasin level, restoration of degraded areas and protection of vulnerable areas; and (ii) Prevention, early warning, and monitoring systems for natural phenomena.
CO-0243	Emergency Reconstruction Facility Following the Earthquake in the Coffee Belt	Colombia	1999	ERF	355,000	20,000		100%	To resume basic services to the population stricken by the earthquake in the coffee belt.	Provide resources for urgent activities including debris removal, building demolition, the inspection and stabilization of buildings and bridges, temporary housing and, in general, repair of the infrastructure of services such as drinking water and sanitation.

DR-0131	Local Road Maintenance and Rehabilitation Program, Phase II	Dominican Republic	1998	Prevention	60,000	48,000	15.86%	100%	To ensure sustainability of local road maintenance. Specifically, (i) consolidate modernization of the institution responsible for the local roads systems, (ii) promote new implementation arrangements (iii) help devise new alternative ways to ensure steady, permanent funding of maintenance plans; and (iv) help fund a portion of the annual investment plans for rehabilitation and maintenance of local roads and bridges.	Negative environmental impacts, identified in the environmental and social impact report, are small and can be reduced or prevented altogether. The following kinds of impact are possible: disputes over land use, erosion, negative effects on the groundwater supply or water quality, and on the landscape or unique habitats.
DR-0135	Reconstruction and Improvement Program in the Wake of Hurricane Georges	Dominican Republic	1998	Rehabilitation/ Reconstruction	117,000	105,000	90.05%	100%	To restore parts of the country's infrastructure and economic flows that were hard hit by Hurricane Georges, with an emphasis on aid to the poor, disaster prevention, and involvement of the populace in preventative initiatives.	
DR-0145	Sector Facility; Disaster Prevention and Risk Management Program	Dominican Republic	2002	Prevention	6,661	5,000		100%	To help the country to improve its capacity to reduce and manage risks of disasters.	Component I: Local disaster prevention and risk management. Objective is to enable eight municipalities to better understand and manage their risk of disasters and to provide the national authorities with a test model for supporting local risk management.
EC-0143	Slope Protection Program for Mt. Pichincha	Ecuador	1996	Prevention	25,000	20,000		68%	To control runoff, flooding and mudslides on the eastern slopes of Mt. Pichincha.	
EC-0182	El Nino Emergency Program	Ecuador	1997	Rehabilitation/ Reconstruction	231,000	105,000	100.00%	100%	To restore socioeconomic development in areas affected by El Nino.	
EC-0187	Supplementary El Nino Emergency Program (Coastal Highway System)	Ecuador	1999	Rehabilitation/ Reconstruction	60,000	48,000	91.28%	100%	To reopen the coastal highway network damaged by El Nino. In addition, studies and final designs for the works to be undertaken in an-after-the-emergency' stage will be prepared, covering reconstruction activities to be financed under a new operation.	
EC-0200	Metropolitan Quito Environmental Sanitation Program (Phase I)	Ecuador	2002	Prevention	50,000	40,000	....	33%	To reduce flooding, mudslides and landslides, to expand water and sewer services in MDMQ priority areas, and to build institutional capacity for efficient management of EMAAP-Q water and sewer services.	

ES-0087	Housing Program	El Salvador	2001	Prevention	142,700	95,500	....	14%	To support the Government of El Salvador in developing and introducing a set of sustainable housing policy instruments.	Component 5 includes risk prevention (municipal environmental maps and studies on natural disaster-resistant construction technologies).
ES-0119	Agribusiness reengineering project	El Salvador	1997	Prevention	31,250	25,000	0.81%	68%	To promote higher incomes from agricultural and forestry activities by developing greater efficiency and higher value added.	
ES-0120	Local Development Program II	El Salvador	2001	Prevention	77,800	70,000	20.64%	74%	To improve the living conditions of poor people living in vulnerable municipalities and communities.	
ES-0129	Multiphase Program for Sustainable Roads in Rural Areas	El Salvador	2001	Rehabilitation/ Reconstruction	136,700	105,000	11.89%	100%	To promote passenger and freight transportation by rehabilitating a portion of the tertiary road system in rural areas, establishing new systems for road maintenance, and modernizing the transportation sectors institutional structure.	Under PNCSAR, priority is given to roads serving the most impoverished areas and areas vulnerable to natural disasters.
ES-0148	Emergency Reconstruction Support Program Following the Earthquake of January 2001	El Salvador	2001	ERF	25,000	20,000	100.00%	100%	To contribute to efforts to restore basic priority services to the population affected by the earthquake.	Program resources will be used to remove debris or rent private, unimproved lots with an option to purchase and subsequent temporary housing on these permanent residence sites, prevention measures to stabilize hillsides in order to ensure the population's safety.
ES-0150	Emergency Reconstruction Support Program Following the Earthquake of February 2001	El Salvador	2001	ERF	25,000	20,000	92.05%	100%	To help restore basic priority services to the population affected by the earthquake.	
GU-0133	Program for Natural Resource Management in Upper Watersheds	Guatemala	2002	Prevention	44,450	40,000	....	10%	To improve natural resource management in upper watersheds by means of a strategy to support adjustment and/or conversion of production by small producers in rural areas.	The third component of the program consists of activities and investments to reduce vulnerability to natural disasters, to manage risk, and to develop criteria for valuation of the environmental services provided by watersheds.
GU-0137	Emergency Program in Response to Natural Disasters	Guatemala	1998	Rehabilitation/ Reconstruction	44,470	40,000	98.84%	100%	To prevent, avoid and reduce the effects that, as a result of the natural disasters that hit Guatemala in the last six months.	El Nino resulted in landslides, avalanches, high water in rivers, and mudflows. Hurricane Mitch caused severe damage.

GU-0155	Urban Poverty Reduction Program	Guatemala	2002	Prevention	52,000	46,800	....	48%	To help reduce poverty in urban areas of the Department of Guatemala by improving living conditions of residents of urban shantytowns.	Only mention of natural disasters states the lack of appropriate channeling of rainwater increases vulnerability to natural disasters in settlements located on steep slopes.
HO-0131	Social Investment Program (FHIS III)	Honduras	1998	Rehabilitation/ Reconstruction	55,600	50,000	94.64%	95%	Damage evaluation; infrastructure emergency reconstruction; community participation.	
HO-0143	Emergency Road and Water-Supply Infrastructure Project	Honduras	1998	Rehabilitation/ Reconstruction	28,700	25,800	99.19%	100%	To alleviate the economic, social, and environmental impact of the damage caused by Hurricane Mitch to Honduras's road and water-supply infrastructure.	
HO-0146	Post Hurricane Housing Program	Honduras	1999	Rehabilitation/ Reconstruction	11,550	10,390	25.12%	78%	To support in an initial stage the Government's strategy to develop housing solutions for those low-income households made homeless by Hurricane Mitch.	
HO-0164	Road Infrastructure Project	Honduras	2000	Rehabilitation/ Reconstruction	31,700	26,800	24.20%	93%	To supplement the financing approved by the Bank's Board of Executive Director in January 1999 for the emergency road and water-supply infrastructure Program (HO-0143).	
HO-0179	Multiphase Program for Natural-Resources Management in Priority Watersheds - Phase I	Honduras	2001	Prevention	27,800	25,000	5.30%	11%	To spur processes that can achieve sustainable rural development, by strengthening natural-resources management in central government agencies and at the local level. To improve watershed management.	Module 4 (\$1.3 million) will support the role of the Standing Committee on Emergency Management (COPECO). Increase disaster prevention and management capacities.
JA-0123	Emergency Reconstruction Facility (ERF); Following Torrential Rains in Jamaica	Jamaica	2002	ERF	20,000	16,000	29.49%	100%	To address the temporary reconstruction, stabilization, and repair of infrastructure within five parishes declared disaster areas as a result of heavy rains during the May/June 2002 period as well as to strengthen the country's ability to respond to emergencies.	The program will provide resources for urgent activities needed to restore basic infrastructure services.
ME-0137	Housing Finance Program	Mexico	2000	Prevention	1,170,000	505,000	....	1%	To improve the efficiency of Mexico's formal housing finance system and facilitate its expansion to lower income segments of the population.	Request developers to evaluate soil contamination and natural hazards.

ME-0179	Mexico Valley Sanitation Program	Mexico	1996	Prevention	1,035,000	365,000	0.87%	31%	To help solve drainage problems in the Mexican Valley metropolitan area (ZMVM) in order to prevent catastrophic floods; reduce wastewater pollution to improve health conditions; and slow environmental degradation.	
NI-0064	Multi-Phase Low-Income Housing Program; First Phase	Nicaragua	2002	Prevention	50,300	42,500	....	1%	To improve housing conditions of low and moderate-income households by providing subsidies, deepening markets, and strengthening institutions in the sector.	As part of the investment component the program addresses the needs related with environmental vulnerability of low-income housing settlements by introducing an instrument that orients construction of safe areas and strengthens municipalities' capabilities.
NI-0068	Road Rehabilitation and Improvement Program	Nicaragua	1995	Rehabilitation/Reconstruction	223,000	75,000	100.00%	34%	To advance economic and social development by improving the country's road infrastructure and institutionally strengthening the subsector. The purpose is to afford a sound infrastructure for the transport of goods and persons and to promote foreign and domestic trading, to be accomplished through the anticipated reduction in transportation costs and more efficient maintenance.	p. 43 "While Nicaragua is located in an area of considerable seismic activity and is prone to torrential rains and flooding, one can never predict where phenomena of this kind will occur. The program does not include measures to mitigate the effects of such eventualities."
NI-0099	Pan-American Highway Rehabilitation Program	Nicaragua	1999	Rehabilitation/Reconstruction	81,600	50,000	94.00%	91%	(i) to support rehabilitation of the Pan-American Highway, (ii) to support implementation of a sustainable road maintenance mechanism.	
NI-0108	Program to Fight Poverty and Strengthen Local Capacity	Nicaragua	2000	Prevention	55,645	50,000	8.75%	5%	To help fight poverty by providing funding for basic social infrastructure through delegation and participation that improves access by the poor. Specifically, to strengthen community and local government capacity for implementing and maintaining basic.	Included in component 2; Strengthen of local technical capacities, training for NGOs and other local actors on issues including natural disaster mitigation. Component 3 FISE is responsible for contracting technical assistance.
NI-0141	Socioenvironmental and Forestry Development Program II (POSAP II)	Nicaragua	2001	Prevention	38,000	32,700	11.01%	11%	To improve socio-economic conditions and living standards of resident of priority Nicaraguan watersheds and lessen the impact of natural disasters in these basins, through the sustainable use and development of renewable natural resources.	A lot of mention of prevention and mitigation throughout the loan

PE-0188	El Nino Emergency Program	Peru	1997	Prevention	215,000	150,000	98.85%	89%	To carry out activities to prevent or mitigate the impact of the El Nino phenomenon and to rebuild the physical infrastructure damages and restore services interrupted by it.	It is considered an Emergency Program but in the loan document money is distributed for prevention and reconstruction projects.
PE-0215	Earthquake Emergency Program	Peru	2001	ERF	20,000	20,000	100.00%	100%	To provide relief in earthquake struck areas (Earthquake 23. June 2001 southern Peru).	
PN-0149	Multiphase Program for Sustainable Development of Bocas del Toro	Panama	2002	Prevention	469,000	42,200	....	1%	To foster conditions for the sustainable development of the Bocas del Toro region through support for activities and investments that will yield economic, social, and environmental benefits.	Phase I will focus on building management capacity for the productive use of natural resources in a sustainable manner, and for reducing vulnerability to natural hazards.
PR-0112	Emergency and Infrastructure Rehabilitation Program	Paraguay	1998	Rehabilitation/Reconstruction	40,000	35,000	73.18%	100%	To support the rapid restoration and reopening of the infrastructure destroyed or damaged by the effects of El Nino and prevent future damage from similar phenomena; and to improve the response capacity of the institutions in charge of dealing with emerge.	
VE-0122	Emergency Program for Torrential Rains, Flooding and Landslides	Venezuela	2000	ERF	40,000	20,000		100%	To restore basic services and to take urgent measures to avert additional losses to persons and property from torrential rains, floods, and landslides mainly in the central littoral of the country.	

Note: ¹ = % of total project amount apparently devoted to natural disaster related expenditure.

Technical cooperation projectss (> US\$ 150,000) related to natural disasters, 1995-2002

Number	Title	Country	Year	Total Project Amount (US\$ 1000s)	IDB Amount (US\$1000s)	Classification	Type of Risk
TC-98-03504-AR	Development of a Digital Cartographic Information System	Argentina	1999	150	150	Prevention	Natural disaster (general)
TC-96-01-08-1	National Geographic Information System	Bahamas	1997	1,292	992	Prevention	Natural disaster (general)
TC-99-02-01-1-BL	Strengthening of the National Emergency Management Organization	Belize	1999	180	150	Prevention	Windstorm
TC-98-10-46-8-BO	Institutional Strengthening in the Area of Digital Cartography	Bolivia	1999	150	150	Prevention	Natural disaster (general)
TC-98-01-24-3-CO	Chinchina River Watershed Management Plan	Colombia	1998	390	150	Prevention	Natural disaster (general)
TC-99-03-03-1-CO	Demolition Debris Management and Disposal in the Coffee Belt Region affected by the Earthquake	Colombia	1999	150	150	Emergency Assistance	Earthquake
TC-99-09-01-6-CO	Solid Waste Management and Disposal in the Coffee Belt Region of Colombia	Colombia	2000	950	740	Prevention	Earthquake
TC-96-03-269	Design and Feasibility Studies of the Rio Grande de Tarcoles Integrated Watershed Management Program	Costa Rica	1997	868	749	Prevention	Flood
TC-98-09-49-5	Program of Reconstruction and Improvements after Hurricane "Georges"	Dominican Republic	1998	750	750	Emergency Assistance	Windstorm
TC-99-10-02-9	Flood-related disaster prevention and mitigation in the lower Rio Lempa watershed	El Salvador	1999	150	150	Prevention	Flood
TC-99-08-02-4-ES	Sustainable Development Upper Lempa River Basin	El Salvador	1999	175	150	Prevention	Natural disaster (general)

TC-00-09-02-6-ES	Sustainable Development Lower Lempa River	El Salvador	2001	374	299	Prevention	Flood
TC-01-04-02-9	Apoyo a la Ejecución y Seguimiento del Programa de Reconstrucción	El Salvador	2001	938	750	Reconstruction	Earthquake
TC-99-08-0-23-GU	Sustainable Development Upper Lempa River	Guatemala	1999	175	150	Prevention	Natural disaster (general)
TC-01-04-00-1	Uso SIG en Desastres Naturales	Guatemala	2001	165	150	Prevention	Natural disaster (general)
TC-98-11-98-7-HO	Evaluation of Disaster Damage: Tegucigalpa Water and Sewerage	Honduras	1998	150	150	Reconstruction	Windstorm
	Reconstrucción Pos Huracán Mitch	Honduras	1998	150	150	Reconstruction	Windstorm
TC-99-08025-HO	Sustainable Development Upper Lempa River	Honduras	1999	175	150	Prevention	Natural disaster (general)
TC-99-03-00-4	Strategic Planning for the Reconstruction of Tegucigalpa	Honduras	1999	451	410	Reconstruction	Windstorm
TC-99-03-00-7	San Pedro Sula Emergency Recovery Program Technical Cooperation for flood protection works	Honduras	1999	440	400	Reconstruction	Flood
TC-98-12-00-9	Program to Support the National Reconstruction Process	Honduras	1999	1,100	1,000	Reconstruction	Windstorm
TC-99-05-04-4	Apoyo Rehabilitación Infraestructura Dañada	Honduras	1999	150	150	Reconstruction	Windstorm
TC-98-01-30-0	Cooperación Técnica Para la Formulación del Programa Nacional de Ordenamiento Territorial (PRONOT)	Honduras	2000	732	652	Prevention	Windstorm
TC-01-12-02-0	Gestión financiera del riesgo de catástrofes	Honduras	2002	165	150	Prevention	Natural disaster (general)
TC-98-11-24-2	Reconstrucción Posterior Huracán Mitch	Nicaragua	1998	150	150	Emergency Assistance	Windstorm

TC-99-09-02-0	Assessing Vulnerability to Natural Disasters/and land use planning, Planning use of land affected by Hurricane Mitch.	Nicaragua	1999	160	150	Reconstruction	Windstorm
TC-99-12-044-NI	Danish Trust Fund for Consulting Services, Special contribution for the reconstruction of countries affected by Hurricane Mitch	Nicaragua	2000	175	150	Reconstruction	Windstorm
TC-98-01-49-1	Formulación del Programa Nacional de Ordenamiento Territorial (PRNOT)	Nicaragua	2001	765	650	Prevention	Natural disaster (general)
TC-02-08-01-5	Multi-Phase Low-Income Housing Program, First Phase: Preparation of Environmental Risk Maps	Nicaragua	2002	300	300	Reconstruction	Natural disaster (general)
TC-98-06-48-3	Strategy for Sustainable Development of the Panama Canal Watershed	Panama	2000	3,238	1,000	Prevention	Natural disaster (general)
TC-95-05-16-8	Preparation of the Management Plan and Feasibility Studies for the Rimac River Basin Environmental Management Program	Peru	1996	830	740	Prevention	Flood
TC-97-11-24-4-PE	El Nino Rapid Early Warning System Demonstrative Project	Peru	1998	150	150	Prevention	Flood
TC-97-08-35-8	Zonificación Ecológica-Económica para al Desarrollo Sostenible de la Cuenca Alta del Río Madre de Dios	Peru	1998	150	150	Prevention	Flood
TC-97-11-24-4	Predicciones Desastres - Proyecto El Niño	Peru	1998	150	150	Prevention	Flood
TC-95-07-50-2	Ayuda de Emergencia para OECS	Regional	1995	150	150	Emergency Assistance	Windstorm
TC-96-02-15-4-RG	Digital Mapping and Geographic Information Systems Pilot Project	Regional	1997	889	608	Prevention	Natural disaster (general)
TC-99-06-00-6	Strengthen Regional Dialogue in the post Mitch Process	Regional	1999	200	150	Prevention	Windstorm

TC-97-12-38-3-RG	Study on the Prediction and Amelioration of Socio-Economic Impacts of el Nino Southern oscillation (ENSO) in Latin America and the Caribbean	Regional	1999	1,538	998	Prevention	Flood
TC-97-09-46-3	Mitigación Desastres en Centroamérica	Regional	1999		1,110	Prevention	Natural disaster (general)
TC-00-02-02-0-RG	Participación Comunitaria y Educación en la Salud para el Combate al Dengue	Regional	2000	356	291	Prevention	Natural disaster (general)
TC-01-09-018-RS	Practical Applications of Financial Instruments for Natural Disasters in Latin America	Regional	2001	170	150	Prevention	Natural disaster (general)
TC-00-07-03-1	Updating Wind and Earthquake Codes for ACS Countries	Regional	2001	150	150	Prevention	Natural disaster (general)
TC-01-03-04-4-RG	Disaster Relief and Conservation	Regional	2001	150	150	Prevention	Natural disaster (general)
TC-01-01-07-2-RG	Program to Combat Desertification in South America	Regional	2002	1,090	1,000	Prevention	Natural disaster (general)
TC-00-04-01-7-UR	Integration of INE and Cadastral Spatial Data Base to Support Rural Infrastructure Planning and Management	Uruguay	2001	420	350	Prevention	Natural disaster (general)
TC-98-11-91-1-UR	Spatial Information System for National Infrastructure Management and Planning	Uruguay	2001	900	750	Prevention	Natural disaster (general)

Disaster Reduction in Development: Non-financial activities sponsored by the IDB

Instrument/Activity	Example/Description
Action Plan	<u>The Plan of Action</u> (<i>Facing the Challenge of Natural Disasters in Latin America and the Caribbean: An IDB Action Plan. March 2000.</i>) The Plan of Action outlines the IDB's efforts to mainstream risk management into the way the Bank does business, including the creation of new financing instruments, establishing risk management focal points within the regions and incorporating risk analysis and management in the regular project cycle.
<p>1. Disaster Policy</p> <p><u>Accomplishments:</u></p> <p>a. Consultations</p> <p>b. Good practices in risk management systems</p> <p>c. Good practices on financial instruments</p> <p>d. Participation in regional initiatives</p> <p><u>Opportunities:</u></p> <p>a. Seminar and paper on man-made disasters</p> <p>b. Good practices in IDB financing instruments</p>	<p>The Bank's operational policy for disaster reduction is OP-704 <i>Natural and Unexpected Disasters</i>. There is a mandate by the Board of Directors of the Bank to review this 1998 policy during 2003-2004.</p> <p>a-Consultation with CABEL, CAF, CDB, WB, ADB. Preparation of matrix to compare policies of these IFIs 3-5/2003.</p> <p>Good institutional practices:</p> <p>b.1- National Systems for the Comprehensive Management of Disaster Risk. (Paul Freeman, et al.). Prepared 2002. Edited for a book (with Regional Dialogue) 5/2003.</p> <p>b.2- Disaster Risk Management at Local Level. Study and meeting 3/2003 (with GTZ and Regional Dialogue). Follow-up subregional meeting with FEMICA in Guatemala 10/2003</p> <p>c. Good financial practices:</p> <p>c.1 Surviving Natural Disasters: Planning and Financial Protection (Kari Keipi and Justin Tyson. Published 10/2002).</p> <p>c.2 Innovative Financial Instruments for Natural Disaster Risk Management. (Torben Andersen. Published 12/2002).</p> <p>c.3 Financial Strategies for Natural Disaster Reconstruction. (Paul Freeman et al). Prepared 2002. Edited for a book (with Regional Dialogue) 5/2003</p> <p>c.4 Disaster Risk Management Financing at Local Level. (GTZ). Regional Disaster Dialogue study, 2003). Editing in progress by GTZ.</p> <p>c.5 Strategies for financing risk management of draught (RE2/EN2. Alberto Paez). Prepared draft document 12/2002</p> <p>c.6 Practical Applications of Financial Instruments for Disaster Reduction. (ATN-NC-7699-RS). Draft country documents ready 6/2003. Draft final document 9/2003.</p> <p>d. Contribution to Inter-American Strategic Plan for Disaster Reduction (OAS) . Presented to the OAS Permanent Council 5/2003</p> <p>a. Draw conclusions of the need to adjust the Policy on the basis of the seminar 6/19/2003. Possibly produce a document for publication.</p> <p>b. On the basis of existing studies, innovative ideas, experiences with the Emergency Reconstruction Facility and the Disaster Prevention Facility and OVE evaluation, prepare a document on IDB instruments (hiring consultant).</p>

Instrument/Activity	Example/Description
<p><u>Challenges:</u></p> <p>a. Get tangible help from other working group members</p> <p>b. Policy profile</p>	<p>a. Coordinate with operational divisions (commitments).</p> <p>b. Prepare profile simultaneously with the review process of OVE evaluation.</p>
<p>2. a Review of Special Instrument: Emergency Reconstruction Facility</p> <p><u>Accomplishments and Progress:</u></p> <p><u>Opportunities:</u></p> <p><u>Challenges:</u></p>	<p>Proposals presented by some Executive Directors to amplify the scope of the ERF such as to include humanitarian aid and financing of agricultural inputs after a drought. IDB Governors mandated the Administration to study the inclusion of “non-natural, non-financial disasters” in the menu of future financing through the mechanism.</p> <p>a. OVE evaluation of the Emergency Reconstruction Facility in 2002.</p> <p>b. A slightly revised document of the Facility was prepared 2002 and presented in CRG 2/2003, Programming Committee 4/2003 and the Board 5/2003.</p> <p>Borrowing countries consider this an important instrument for emergency situations. A final revision of ERF is expected to take place after the current Disaster Policy review.</p> <p>The mandate given by the IDB Governors to study the inclusion of “non-natural, non-financial disasters” in the menu of future financing through the Facility will provide a challenge both for the Policy and future ERF reviews. As a first step, the seminar on man-made disasters, 6/19/2003 has cast light on the level of amplification to consider.</p> <p>Other challenges include the possible future demands for inclusion of such items as humanitarian aid and financing of agricultural inputs after a drought through the ERF.</p>
<p>2. b Use of Special Instrument: Sector Facility for Disaster Prevention</p> <p><u>Challenges:</u></p>	<p>The objective of the Disaster Prevention Sector Facility, created in March 2001, is to strengthen disaster prevention and risk management systems through vulnerability reduction and improved preparedness to natural disasters. The first operations were approved for the Dominican Republic and Bolivia in 2002.</p> <p>However, incentives to take out prevention and mitigation loans are weak. The Dominican Republic project was cancelled by the Government and Bolivia appears to have second thoughts in the context of renewed military influence in disaster management that appears to re-focus it on ex-post actions. Other projects planned for Colombia, Ecuador and Honduras have received little Government support.</p>
<p>3. Development of Disaster Information and Indicators</p>	<p>The <u>Information Program</u>. This RTC financing was approved in 2002. It is a technical assistance package that includes national level studies and country workshops to facilitate decision-making by economic cabinet agencies to promote the management of disaster risk, as well as a regional technical workshop to evaluate and disseminate the outputs of the country-specific work. This assistance will be carried out in four pilot countries (Chile, Guatemala, Mexico and Barbados from which letters of interest have been received).</p> <p>The <u>Indicator Program</u> finances the development of a sophisticated assessment methodology that will measure key elements of countries’ vulnerability to natural disasters and the performance of different risk management tools in reducing that vulnerability. Ten case countries will be included.</p> <p>The execution is expected to end in November 2004.</p>

Instrument/Activity	Example/Description
<p><u>Accomplishments and Progress:</u></p> <p><u>Opportunities:</u></p> <p><u>Challenges:</u></p>	<p>Information Program (ECLAC). Progress reports 7/2003, 4/2004, 8/2004. Seminar 1/2004</p> <p>Indicators Program. (Universidad Nacional de Colombia). Seminar 7/3003, Reports 8/2003, 1/2004, 7/2004.</p> <p>Both projects will support a basic need in disaster risk management: the availability and processing of information for decision-making. They may have a direct positive impact in strategic decision-making and project preparation for IDB financing.</p> <p>The Information program strengthens cooperation IDB/ECLAC. The role of ECLAC has been important especially in ex-post damage evaluation for IDB's ERF loans. The project will also provide better ways to generate ex-ante information for prevention and mitigation investments in seven case countries.</p> <p>The Indicator program will benefit from similar efforts by UNDP (country indexes) and Columbia University (detailed sector indicators). Strong cooperation with these entities has been agreed upon. Ten case study countries will participate in the effort.</p> <p>The challenges relate primarily to the cooperation and basic data available in the case study countries.</p> <p>Also the bureaucracy of ECLAC may slow down the execution pace of the Information Program.</p>
<p>4. Sectoral Checklists for Disaster Risk Management</p> <p><u>Accomplishments and progress</u></p>	<p>An internal Bank <u>checklist</u>, indicators on disaster risk management is under preparation for 10 sectors in consultation with technical specialists across the IDB. The checklists will help to <u>incorporate disaster risk analysis in the different phases of project cycle</u> of Bank financed projects</p> <p>First phase: 2 sectors with seminar in Antigua 10/2003. Second phase: 4 sectors with workshop in Quito 2/2004.</p> <p>A consultation process took place to prepare the draft documents for eight sectors in 2002. 36 specialists of the Bank participated in the process.</p> <p>1) Draft checklists exist for the following sectors which form the first set of checklists, since 5/2003.</p> <ul style="list-style-type: none"> .I Education .I Transport .I Energy .I Water and sanitation .I Agriculture <p>2) Draft versions of the second set of checklists 11/2003</p> <ul style="list-style-type: none"> o Health (health infrastructure component has been prepared; health service consultant is being contracted) o Housing (consultant is being contracted) o Micro and small enterprise (there is an advanced draft) o Modernization of the State (a well consulted draft exists) o Environment (9/2003)

Instrument/Activity	Example/Description
<p><u>Opportunities</u></p> <p><u>Challenges</u></p>	<ul style="list-style-type: none"> • Distribution of second set 1/2004 • Training workshop in Washington to review the second set 3/2004 <p>The Disaster Action Plan clearly spells out the necessity to incorporate the disaster risk management aspect in the project cycle of the Bank</p> <p>These types of checklists are a novelty among the IFIs. NGOs are interested in them. Several entities have expressed a desire to receive copies of the end products.</p> <p>The inclusion of the checklists in CESI process constitutes both a n opportunity and challenge</p> <p>There will be opposition projects by the Regional Operational Departments to a forced use of the checklists in Bank. Therefore a strategy calls for:</p> <ul style="list-style-type: none"> o Awareness raising (distribution of the first set of checklists to participating RE division chiefs and staff) o Training of IDB staff o Careful consideration on how to include the checklists in CESI process
Note on Events Related to Disaster Risk Management	<ol style="list-style-type: none"> 1. IDB annual meeting. Seminar and presentation of Action Plan (two days). New Orleans. March 2000. 2. Inter-American Committee of Natural Disaster Reduction. Washington. Three meetings 2000-2002. Heads of organizations of the OAS system. 3. OAS. Presentation of Disaster Finance Working Group to the Permanent Council June 2001 4. Hemispheric summit of Quebec. Action Plan related to disaster reduction. April 2001. Heads of State and government officials. 5. Seminar on financial instruments in disaster risk management. May 2001. Washington. 50 participants, including financial market experts from New York. 6. Special Board briefing on disaster risk financing. Washington. November 2001. 7. JICA-IDB workshop on disasters and infrastructure investments. November 2001. 8. IDB - CAF - Andean county coordination meeting in Bogota, Colombia. November 2001. 9. Seminar on Crisis and Disasters. Washington. November 2001. 10. Training of IDB staff. Manizales, Colombia. November-December 2001. 11. Hemispheric Conference on Disaster Reduction. Costa Rica. (IDB cosponsored)

Instrument/Activity	Example/Description
	<p>December 2001.</p> <p>12. Training of IDB staff. Washington. February 2002.</p> <p>13. OAS. Presentation to the Permanent Council on Disaster Risk Management and Financing. Washington. November 2002.</p> <p>14. OAS. Presentation of the Inter-American Strategic Plan for Disaster Risk Management Plan to the Permanent Council. (IDB as cosponsor) Washington. May 2003.</p> <p>15. Seminar on Human Induced Disasters . Washington. June 2003.</p> <p>16. Expert seminar on Disaster Indicators. Barcelona. July 2003.</p> <p>17. Regional Policy Dialogue meetings:</p> <ul style="list-style-type: none"> - Planning meeting to launch the Natural Disaster Network. May 9 2001. - I Meeting of the Natural Disaster Network, "National Systems and Institutional Mechanisms for the Comprehensive Management of Disaster Risk," November 15 and 16, 2001. - II Meeting of the Natural Disasters Network, "Alternative Government Strategies for Reconstruction Financing," May 23-24, 2002. - III Meeting of the Natural Disasters Network, "Disaster Risk Management at the Local Level," March 6-7 2003.
<p>Note on the Focal Points; Past Internal Strengthening of the Bank</p>	<p>The IDB has identified 14 primary <u>focal points</u> among its technical specialists and financial analysts of its headquarters in Washington, D.C. and a disaster focal point in each of its offices in the 26 borrowing member countries in Latin America and the Caribbean. There are 12 secondary focal points (in infrastructure development, state governance and civil society, and social development).</p> <p>The Bank organized <u>training</u> for 85 staff members in 2001 and 2002, which had the following objectives: provide field staff with a strong conceptual foundation of disaster risk management, specifically as it relates to the new Sector Facility for Disaster Prevention's areas of activity; familiarize field staff with the various components of disaster risk management; and train staff in identifying and evaluating technical expertise to support Bank financed risk management operations. The first training workshop was held in Manizales, Colombia late 2001, and a second event was organized in Washington DC in 2002.</p> <p>A <u>special briefing</u> was organized in late 2001 <u>for the IDB Executive Directors</u> concerning the potential for the Bank to design financing instruments for disaster risk mitigation and ways to prepare for responses to financial needs of countries after a catastrophe.</p> <p>A "<u>tool kit</u>" has been prepared 2002 and distributed widely for the use of the Bank staff. It incorporates guidelines and examples of project preparation and execution both for disaster prevention and mitigation, emergency funding and financing of reconstruction after a natural catastrophe.</p>

Instrument/Activity	Example/Description
<p>Note on Cooperation with other agencies</p>	<p>The Bank is presiding over an <u>OAS</u> Working Group on Financing within the Inter-American Committee on Natural Disaster Reduction (IACNDR). The IDB is contributing to the preparation of a <u>Strategic Plan on Disaster Reduction and Risk Management</u> within the IANDR.</p> <p>It has been participating since the early stages of planning for the <u>Conference on Hemispheric Security</u> to be hosted by Mexico in October 2003. Disaster management is an important theme of the meeting.</p> <p>In addition the Bank is completing studies on financial instruments to protect countries against the economic impacts of catastrophes according to the specific mandate entrusted to it at the <u>Hemispheric Summit</u> of the Heads of State in Quebec of April 2001.</p> <p>The IDB participated actively in the organization of the <u>Hemispheric Conference</u> on Disaster Reduction in Costa Rica in December 2001 in cooperation with the U.S., OAS, PAHO and others.</p> <p>Other regional cooperation includes continuous work with <u>ECLAC</u> on economic evaluation of disaster losses, strategic activities in the sub-regional level with the Andean Development Corporation (CAF), and specialized disaster agencies such as <u>CEPREDENAC</u> in Central America and the <u>CDERA</u> in the Caribbean.</p> <p>Coordinated actions with <u>Germany, Norway and Sweden</u> have included arranging parallel financing on natural disaster prevention and mitigation on several natural resource conservation and development programs of the Bank in the region. Cooperation with Germany was strengthened through the work contribution of a GTZ specialist at the IDB in 2001. Future cooperation with Germany includes: I) publication on Disaster Risk Management at Local Level in 2003 and ii) the organization of training event in Quito October 2003.</p> <p><u>Denmark, Norway and especially Japan</u> have provided funds for regional technical cooperations in the disaster risk management field.</p> <p>Significant cooperation is planned with the <u>European Commission</u>.</p> <p>Further international partners include the ISDR (International Strategy for Disaster Reduction), the UNDP, the WMO, other <u>UN agencies</u>, and the <u>World Bank</u> Group.</p>

Source: SDS/ENV

RE2'S DISASTER MANAGEMENT FOCAL POINT (DMFP)
HIGHLIGHTS FOR 2002
(DECEMBER 2002)⁵³

The Disaster Management Focal Point (DMFP) helps to coordinate RE2's participation in disaster-related activities in the region and for promoting risk management in our lending and non-lending activities. At EN2's retreat in February, an open space working group with the field office focal points met and identified a number of areas of continuing interest, including institutional arrangements for integrated disaster management, drought management, methodologies to reduce risk in Bank programs, environmental and risk management at the municipal level, and Bank instruments and training to support prevention and risk management in the countries.

This year, the DMFP continued to take advantage of opportunities to promote the adoption of prevention and risk management in the region, at the same time making progress on the areas of interest identified during the retreat. In particular, technical assistance operations have been developed with the relevant RE2 sector specialists to bring expertise to the countries in new areas. These have included the strategies for financial management of risk by Finance ministries (developed with FI2 and OD3); promoting mitigation works and policies by municipalities (with municipal development group); and contributing to the improvement of drought management (with support from HA field office).

The disaster focal point members have contributed to a variety of activities within RE2 and across the Bank:

- *Emergency Status Reports and Preparation of Emergency TCs.* OD3 prepared six \$50,000 TCs for humanitarian assistance. These included El Salvador and Honduras for Dengue Fever; Costa Rica and Haiti for floods; and Mexico and Haiti for the hurricanes.
- *Country Strategy Papers.* Contributed sections to Honduras, Nicaragua and Costa Rica papers that identify risk management as important for competitiveness, through reducing fiscal volatility and safeguarding investments aimed at poverty reduction.
- *The review of the Bank policy and instruments for disasters.* Contributed to technical discussions with DPP and OVE on the modification of the Bank's emergency response instruments.
- *The cross-fertilization of experience between regional departments.* (i) presentation on urban risk management to the inter-departmental urban development group; (ii) "Drought in Central America", a paper, technical presentations/dialogues with special focus on OD3; (iii) Regional Dialogue for Disaster Prevention Policy – review of consultants' work on financing reconstruction, and members of selection/monitoring panel for the up-coming study on municipal level risk management; (iv) technical review of consultants reports on financial instruments for catastrophe risk, possibilities for Latin America an SDS study, including El Salvador case; (v) GIS Day – "Risk mapping for housing programs"; (vi) Peer reviewers and CRGs for disaster-related operations (Bolivia and Chile)
- *Develop relationships with regional and international cooperation partners.* Various meetings, including: (i) Sida-IDB Partnership (agenda for cooperation); (ii) European Commission (exploring potential joint activities); (iii) JICA (especially, risk management in Honduras); (iv) GTZ (municipal level risk management); (v) CEPREDENAC and CRRH under SICA, CEPAL, and Int'l Strategy for Natural Disaster Reduction (development of PPP projects).

⁵³ Source: Elaborated by Region II.

Regional Initiatives:

Plan Puebla-Panamá: This year, we focused on providing support to the Panamanian Commissioner to help him launch the Disaster Prevention and Mitigation Initiative. In the spring, administrative assistance has been oriented from the Bank's PPP office to the Commissioner; and we developed a Plan of Action for launching the Initiative, which was approved by the Commissioners in August. In September, a consultant was hired (overseen by the focal point), who is currently working to build relationships around the Initiative in the 8 countries, and to develop a shared vision and country commitments within the Plan's framework.

Non-Financial Products:

Drought Management. Sector note reviewing the region's risk (a moderate to severe drought every two years) and proposed a strategy for supporting the management of drought risk in the region.

Operations approved:

Dominican Republic: Disaster Prevention Facility (DR-145). Approved in June, the \$5 million operation aims to help the country to improve its capacity to reduce and manage risks of disasters at the national and municipal levels, and to set the stage for a larger program of public investment in risk reduction.

Nicaragua: Programa de Reactivación Productiva Rural (NI-159). Approved in September, the loan includes financing for reducing potential impacts of drought in risk areas.

Information and Indicators Program for Risk Management due to Natural Disasters (TC-0002018-RG). Regional TC, with Japan Special Funds for \$1.3 million. Two components, with executing agencies, CEPAL and the Universidad Nacional de Medellín. To develop indicators of vulnerability, and their sensitivity to policy instruments. Will pilot the methodology in 10 countries of the Latin American region.

Promotion of good practice for disaster prevention and risk management in Central American municipalities (TC-0209003-RS). Approved in September, the regional TC of \$150,000 from the CABILICA Fund designs and implements a communication strategy for promoting risk management within municipal administrations. Includes in-country focal groups, video documentary of good practice in the region, presentations and discussions at FEMICA annual Forums, and national workshops.

Management of Environmental Risk in Low Income Human Settlements in Urban Areas in Central America (TC-01-06-04-4-RG). To improve the technical and institutional capacity of municipal governments to manage environmental risks and reduce vulnerability in low-income human settlements. Honduras, Nicaragua and El Salvador.

Honduras: Financial management of catastrophe risk (TC-0112020). Approved in September, a \$150,000 program of technical assistance to support the economic authorities to evaluate the probable losses they face due to future disasters and to develop a financial strategy to reduce losses and to meet reconstruction requirements. Designed in collaboration with the World Bank.

Emergency Technical Cooperations (6). El Salvador and Honduras for Dengue Fever; Costa Rica and Haiti for floods; and Mexico and Haiti for the hurricanes.